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UNITED STATES NATIONAL MUSEUM.

PIPES AND SMOKING CUSTOMS OF THE AMERICAN ABORIGINES, BASED ON MATERIAL IN THE U. S. NATIONAL MUSEUM.

BY

JOSEPH D. McGUIRE,
Ellicott City, Maryland.

From the Report of the U. S. National Museum for 1897, pages 351-645, with five plates.

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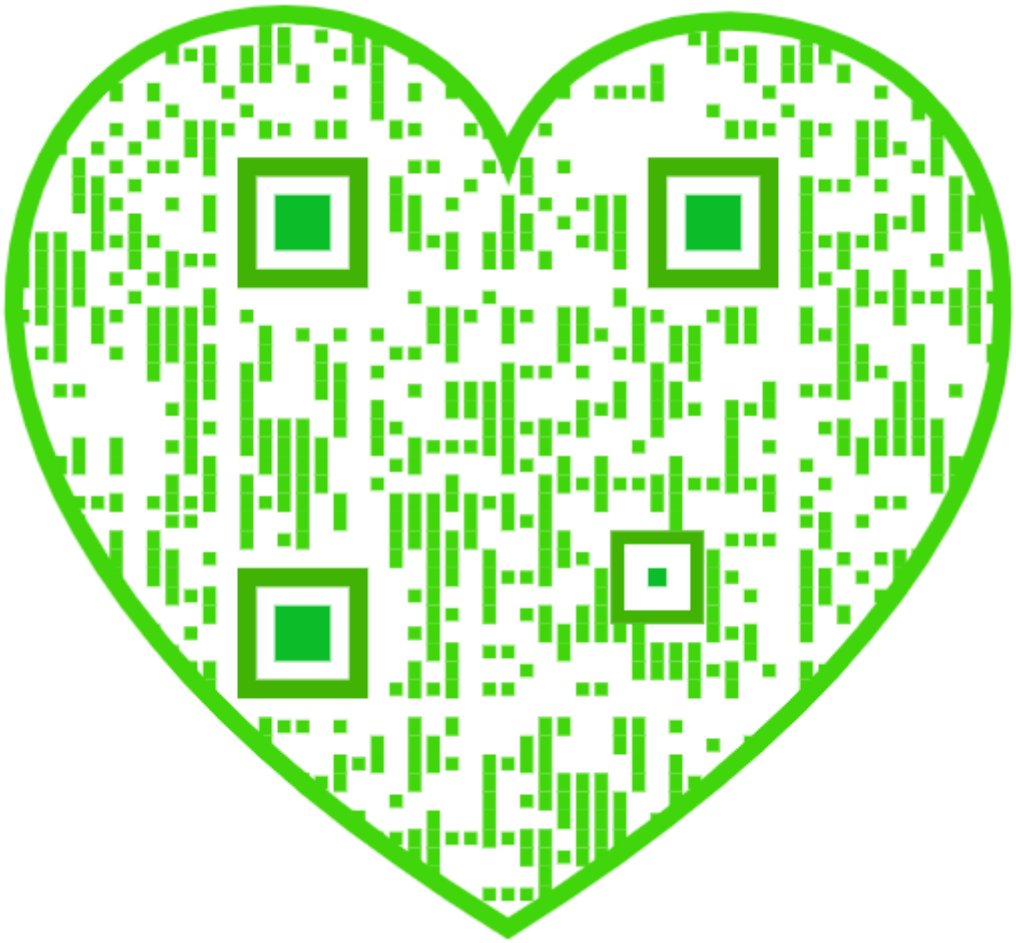

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BY

JOSEPH D. McGUIRE,

Ellicott City, Maryland.

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NOTE.

The first studies for the following paper on "Pipes and Smoking Customs of the American Aborigines" were made from the rich collections in the U. S. National Museum, but as the material grew it was suggested by Dr. G. Brown Goode, assistant secretary of the Smithsonian Institution, that it would be well to carefully consider the pipes contained in other public museums and in private collections. Acting on this suggestion, an extensive correspondence ensued with many persons interested in the subject, and, as will be observed, the work has been greatly facilitated by their courteous assistance. The writer now desires to express his grateful acknowledgments and thanks for the aid afforded him by the loan of specimens, and when this was not possible, of tracings and photographs; also for the list of references suggested, and for the freedom allowed in examination of pipes on all occasions, and in data concerning localities and circumstances under which certain objects were found.

Among those persons whom the writer desires particularly to mention are Drs. William H. Holmes, Otis T. Mason, Thomas Wilson, and Walter Hough, of the U. S. National Museum; Maj. J. W. Powell, Mr. W J McGee, Dr. J. Walter Fewkes, Mr. F. W. Hodge, and Mr. James Mooney, of the Bureau of American Ethnology; Dr. E. A. Barber and Mr. Clarence B. Moore, of Philadelphia, Pennsylvania; Mr. Stewart Culin and Dr. Max Uhle, of the museum of the University of Pennsylvania; Mr. Andrew E. Douglass, of New York; Mr. David Boyle, of Toronto, Canada; Rev. W. M. Beauchamp, of Baldwinsville, New York; Col. Bennett H. Young, of Louisville, Kentucky; Gen. A. L. Pridemore, of Lee County, Virginia; Prof. John Robinson, of Salem, Massachusetts; Mr. Warren K. Moorehead, of the Ohio State University; Capt. H. L. Scott, of the U. S. Army, and Miss Alice Fletcher, of the Peabody Museum of American Archæology and Ethnology, Cambridge, Massachusetts. Also my sincere thanks are due to Prof. P. H. Uhler and Col. William H. Love, of Baltimore, Maryland, and Dr. Frank H. Knowlton and Mr. Charles Schuchert, of Washington, D. C., though it should not be supposed that these kind friends are in anywise responsible for any expressions employed in the body of the monograph unless so quoted.

JOSEPH D. MCGUIRE.

ELLICOTT CITY, MARYLAND, *November 24, 1898.*

A SMOKING FUNCTION.

A bas-relief of part of an altar at Palenque.

After Edward S. Holden in First Annual Report of the Bureau of Ethnology, p. 234, fig. 59.

PIPES AND SMOKING CUSTOMS OF THE AMERICAN ABORIGINES, BASED ON MATERIAL IN THE U. S. NATIONAL MUSEUM

By JOSEPH D. MCGUIRE,
Ellicott City, Maryland.

MEXICAN AND PUEBLO TUBULAR PIPES.

The use of the tobacco plant for smoking purposes is undoubtedly of American origin, and has been common throughout North America among the Indians from a period long prior to the arrival of the whites on the continent. Using the plant for snuffing, however, appears to have been a peculiarity of the Southern Continent, while of the habit of chewing there seems to be but meager reference by early writers, consequently little is known of the extent to which the practice prevailed. The accounts of all early American voyagers, with scarcely an exception, who have come in first contact with the Indians have referred to the common employment of tobacco in all treaties, councils, and, in fact, functions of every kind, including social intercourse, in divination, and in the cure of disease. Other plants, however, have been used quite commonly for the same purpose from the Gulf of Mexico to the Arctic Ocean, and from the Atlantic to the Pacific. There is no doubt that tobacco smoking in pipes such as we are now familiar with, as a habit or pastime, is an invention of the European. Smoke in some form has been employed in the treatment of disease from a time long prior to the Christian era; and the early Spanish, French, and English references to smoking all bear evidence that tobacco was considered a plant of wonderful properties. Herodotus says the Messagetae, a people of Asia Minor, supposed to be Scythians, in battle with whom Cyrus was killed about 529 B. C., are reported "to have discovered trees that produce fruit of a peculiar kind, which the inhabitants, when they meet together in companies and have lit a fire, throw on a fire, as they sit in a circle; and that by inhaling the fumes of the burning fruit that has been thrown on, they become intoxicated by the odor just as the Greeks do by wine; and that the more fruit that is thrown on, the more intoxicated they become, until they rise up to dance and betake themselves to singing."[1]

[1] Herodotus, Book I, p. 88, translated by Henry Cary, New York, 1855.

Many of the early American peoples, including the Aztecs, are described as inhaling smoke for the purpose of intoxicating themselves—a practice yet indulged in at various places. Herodotus also says "that when a man attains great age all his kinsmen meet and sacrifice him," and "that they worship the sun of all the gods."[1]

These rites of the Messagetae are similar to the practices of certain American Indians. That similar conditions naturally engender like practices among races in a primitive stage of development has been observed all over the world. This is noticeable in the primitive tools of all ancient races, there being scarcely an exception to the rule. According to Strabo, the Mysians were eaters of smoke—"Krapnobates."[2]

This reference, however, is rather a suggestion found in a note of the French translation of Strabo than of Strabo himself, who really says "Posidonius relates that the Mysians religiously abstain from eating anything that had life, and consequently from cattle, wherefore they are considered a religious people and called Capnobatae."[3] Plutarch says in De Fluvius, "in Thrace near the Hebrus there grows a plant which resembles the origanum [wild marjoram]; the inhabitants of that country throw the leaves on a brazier and inhale the smoke, which intoxicates them."

Pliny says, "Sandarach, taken in the form of a fumigation, also with cedar, has a remedial effect."[4] This plant is a medium-sized tree (*Callitris quadrivalvis* or *Thuya articulata*) of the pine family from North Africa, and yields a resinous gum, which, when heated or sprinkled on burning coals, emits an agreeable balsamic odor and calls to mind the liquid amber used as a mixture with tobacco by the Aztecs. The Aztecs were described as burning incense and liquid amber and mixing sweet-smelling substances with burning herbs quite often when reference to what we now denominate "smoking" was intended. Reference to the cedar being used in fumigation calls to mind that its bark is smoked at the present time by certain American tribes.

Pliny further says that Appolodorus (a naturalist of the first century) mentions as a remarkable fact that the barbarians, "by inhaling the fumes of chameleuce [colts foot] at the mouth thereby diminish the volume of the spleen."[5] The term "inhalation" suggests something more than a "fumigation," especially when the further recommendation is made of employing the smoke of "dried cow dung" as being remarkably good for phthisis when inhaled through a reed,[6] and "that chameleuce, having its root burnt upon cypress charcoal, the smoke of which is good when inhaled by the aid of a funnel or reed."[7]

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[1] Herodotus, Book I, p. 93, translated by Henry Cary, New York, 1853.
[2] Strabo, Book VII, p. 3.
[3] The Geography of Strabo, Book VII, Chap. 3, p. 454, Bohn edition, London, 1854.
[4] The Natural History of Pliny, Book VI, p. 220, Bohn edition, London, 1866.
[5] Idem, Book IV, p. 362.
[6] Idem, Book V, p. 356.
[7] Idem, Book V, pp. 55, 164.

There is little room to doubt that the tube or funnel is an implement of great antiquity in smoking elsewhere than on the American continent. Implements figured as Roman pipes, so far as they have come under the writer's observation, appear to be modern and of the English or French "trade" type. Other plants are so commonly used in the pipe by the Indians of the whole continent and have been so employed, according to early writers, for so long a period as to indicate a very ancient usage. Although there are several native varieties of the family *Nicotiana* in America, it appears highly probable that the use of tobacco first became general through its cultivation by the Spanish and their trade in it with the natives. The Spanish early cultivated it, for next to food they would naturally grow those plants for which there was the greatest demand and the best market among the natives. It is a well-known fact that the English settlers in Virginia during the first half of the seventeenth century more than once brought themselves to the verge of starvation because of their having cultivated tobacco to the exclusion of necessary vegetables.

Throughout the seventeenth century, if not later, smoking was indulged in by Europeans mainly because of the wonderful properties attributed to tobacco. It was supposed not only to cure disease, but was considered a detergent as well. It was said to prevent the pangs of hunger and fatigue, and was long prescribed as a medicine by the physicians of Spain, France, and England. The visitation of the plague in Europe encouraged the use of tobacco enormously, as it was supposed that it would keep off the disease; and was so sought after and so generally prescribed that its use quickly became a confirmed habit among many persons, and the use of that which had been looked upon as a valued medicine became perverted into a vice difficult to eradicate. And as late as the time of Charles II, tobacco was supposed to be a mighty antidote to the plague, and it has been said that at a certain time during his reign the worst floggings the boys ever received at Eaton were because they refused to smoke.

The employment of the words "funnel" and "reed" by Pliny may appear to be indefinite references to the pipe, but they are equally as distinct as are many of the early Spanish, French, and English expressions used in regard to it, even as late as the first half of the seventeenth century, at which date the word "tobacco" had not yet come into general use.

The most ancient, and at the same time the most reliable evidence of the early employment of the pipe on the American continent is the bas-relief of the Alta Casa or Adoratio, at the entrance of the temple of the Cross, one of the so-called palaces of Palenque, to which attention was called by John L. Stevens, it being deservedly considered one of the most remarkable as well as one of the best known of American antiquities.[1] It is shown as the frontispiece.

[1] Travels in Central America and Yucatan, II, p. 354, New York, 1848.

This slab, or altar, as it has been called, is of artistic concept, design, and finish; it has been referred to as representing a "Maya rain god, Tlaloc, blowing the winds from his mouth." He is figured "with the eagle in his headdress; the jaw with grinders; the peculiar eye; the snake between his legs, and a leopard skin over his back." This glyph represents the official, whether priest or other functionary, standing in an upright position, his arms extended, with the palms of the hands held together, forming a trough at a level with the mouth; lying in this trough of the hands is a tubular object, through which he appears to be blowing a visible something, as indicated by the ascending and descending part of the glyph. The posture is such as may be seen to-day when the Moki priest thus holds the pipe at a ceremonial dance and blows the smoke to the four winds, as well as to the upper and the lower world. The implement upon the slab has the exact shape of the ceremonial pipe of the Moki, as represented by Dr. J. Walter Fewkes. This, moreover, appears to be the type of the most primitive pipe found in America, and the one which is distributed over a greater geographical area than any other found on the continent, and is, in fact, the only type which appears common to the whole country. This opinion is sustained by the pipes found by archæologic excavations in many States, which suggest the tube similar in shape to that pictured on the Palenque tablet as the most primitive pipe of which we have knowledge. "The leopard skin on the back, the beak and eyes of the bird on the headdress of Tlaloc," says Stevens, "was all a mystery, silent, defying the most scrutinizing gaze and reach of the intellect."

The snake so prominent on this slab appears as a garment of snakes on the statue of the bloody Huitzilopotchli, the war god of the Mexicans, who is represented as holding in each of his claw-like hands a human heart. To find a snake carved upon the pipe is by no means an unusual feature, it being one of the most common totems of the North American Indian tribes. The bird, either a hawk or an eagle, on the Palenque tablet represents, very likely, one of the totems. Palenque is in the State of Chiapas, Mexico, in latitude 17° 30′ north, longitude 92° 26′ west, and is supposed to have been in ruins before the invasion of Mexico by Cortez. The smoker, if such he be, on the slab, invests it with unusual interest, for in addition to its being of pre-Columbian origin, its location appears to be that of the extreme southern limit of the pipe in America, so far as we know from records or reliable antiquities.

While the writer is convinced that the tube is the primitive form of the pipe both in Palenque and in the City of Mexico, pipes have been found having their bowl at right angles to the stem. The latter, however, are made from a glazed, red or gray pottery which there is reason to suspect are of Spanish origin and manufacture. While early Spanish writers refer but casually to the habit of smoking among the natives, they constantly speak of the use of incense, and there is reason to

believe that the use of the pipe was often indicated by this expression. It must be remembered that smoking, by its general adoption among the people, struck all early voyagers to America with astonishment, though Spanish, French, English, and Dutch each in turn found wonderful properties in the use of this "sacred herb," or, as Everard calls it, "Embassadors' herb."[1]

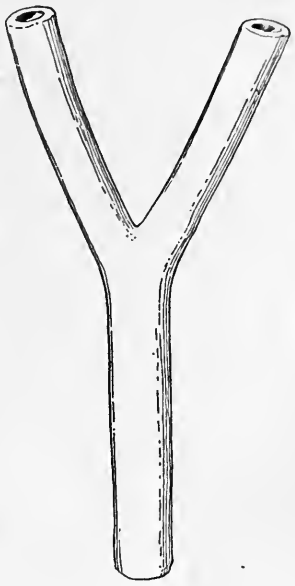

Fig. 1.
A TOBACCO PIPE.
Referred to by Oviedo.

Fig. 1 is an enlargement, after Oviedo, of what is commonly referred to as the first illustration of the American tobacco pipe, though the first two editions of the work did not contain it. The figure was evidently drawn from a description of an instrument which is said to have been used as a snuffing tube employed in inhaling a preparation of the powder, *parica*. This article, Oviedo says, was called a "tobago" and it was evidently that which gave its name "tobacco" to the plant. The only object of this character which has come under the observation of the writer is a very perfect specimen in the museum of the University of Pennsylvania, which is made from the femur of a llama, and is 5 inches long, with a width of 1½ inches at the extremity of the bifurcation, the widest part of the bone. This tube (fig. 2) is carefully polished, and decorated on each side with geometric figures, the significance of which are indecipherable, though the circles upon the bifurcated end look as though intended to represent eyes. The figures are incised and most skillfully executed with some sharp implement. It was found at Tiahuanaco, Bolivia.

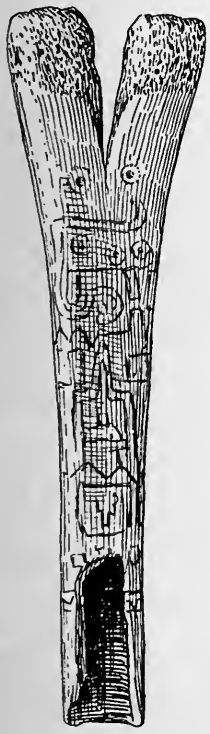

Fig. 2.
SNUFFING TUBE.
Tiahuanaco.
After Dr. Max Uhle, University of Pennsylvania. Original in University of Pennsylvania.

The remarkable similarity of certain smoking customs in the most widely separated parts of the continent is the strongest argument in favor of the antiquity of the habit, and there is little doubt that the smoking of some plant in pipes or tubes has prevailed very generally from a time long prior to the coming of the Europeans on the continent of North America. The most primitive pipe of all was a straight tube, many of which have been found in aboriginal burial places, from Mexico to the Great Lakes, and from the Atlantic to the Pacific oceans. The tube varies, it is true, in both length and diameter, as well as in the material from which it is made; governed,

[1] Everard, Panacea, or the Universal Medicine, p. 4, London, 1659.

doubtless, by the available supply. The first materials employed would be reeds, hollow bones, or wood, which, through a process of evolution, came in time eventually to be stone or earthenware. There is undoubted evidence that pipes throughout the continent were made in many shapes, though it is probable that the most elaborate are the most modern. An endless variety of leaves, twigs, bark, and even the roots of plants have been smoked by American Indians, though sumac and willow have been used by them to nearly as great an extent as tobacco. At times other plants are smoked in preference to tobacco, or as a prerequisite of some ceremonial dance or function.

Excepting the tubular form, the shapes of early American pipes differ greatly with the locality where they occur; those in contiguous territory usually being similar. The geographical limits of a particular pipe, with scarcely an exception, follow the lines of natural trade routes and water courses, which are also, it is true, the lines of least resistance in the distribution of population, because of the greater facility of transportation.

Notwithstanding the ancient foreign references to a habit apparently quite analogous to the use of the tobacco pipe by the American savages, Europeans do not appear to have smoked the pipe until tobacco was carried abroad from America, for all early travelers to this continent appear to have been astonished at the, to them, singular custom of smoking, and they were convinced that the tobacco plant was possessed of wonderful properties, and but few of them failed to refer to it with surprise when they first came in contact with the natives of the Northern Continent.

Columbus on his first voyage mentions the people of Hispaniola as smoking, though the reference appears to relate to something in the nature of a cigar or cigarette rather than a tobacco pipe. Beginning with the dawn of man's employment of tools, throughout all primitive periods of history, and from the most distant parts of the earth's surface, similar customs and implements are encountered which are impossible of reconciliation one with another unless it be that similar conditions produce like results. Among these the inhalation of smoke is only one of many which might be enumerated.

Tobacco was indigenous to the new continent, and the first reference to its use, though not by name, was that reported to Columbus on his first voyage by Rodrigo de Jerez of Agramonte and Luis de Torres, a learned Jew, who were sent out in Hispaniola on November 2, 1492, with letters to the Kahn of Cathay. De Torres could speak Chaldee, Hebrew, and some Arabic, and was thought to be a valuable interpreter for those subjects of the Grand Kahn whom Columbus should encounter.[1]

These messengers, as referred to by the Marquis of Nadaillac, quoting Columbus, "found a great number of Indians, men and women,

[1] Arthur Helps, The Spanish Conquest in America, I, p. 124, New York, 1856.

holding in their hands little lighted brands made of herbs, of which they inhaled according to their custom."[1] According to other writers they were said to have indulged in "a fumigation of a peculiar kind."

The smoke in question was absorbed into the mouth through a charred stick, and was caused by burning certain herbs wrapped in a dry leaf, which outer covering was called "tabaco."[2]

These messengers, says John Harris, "lighting of an Indian town of fifty houses, they were well treated there, the Spanish being honored as if they had been deities."[3] Quite as indefinite is the expression "incensing," later employed on the mainland upon numerous occasions in the various accounts of Cortez's march to the City of Mexico, or as "perfuming themselves." Las Casas, who was a contemporary of Columbus, and the first bishop of Chiapas, is quoted as saying that the "two messengers met great numbers of people of both sexes, the men always with a firebrand in their hands and certain herbs for smoking. These were dry, and placed in a dry leaf, after the manner of those paper tubes which the boys in Spain use at Whitsuntide. Lighting one end, they drew the smoke by sucking at the other. This causes drowsiness and a kind of intoxication, and, according to the statement of natives, relieves them from the feeling of fatigue. These tubes they call by the name of *Tobacos*."[4]

In the early references to smoking a notable peculiarity is that the term employed very commonly is "herbs," which may be because of ignorance of the plant smoked, though it is certainly suggestive also of there being more than one, for it is known that certain of our Indians consider it an essential to their ceremonial smokes or dances to have a mixture of different plants to put in the pipe; though when smoking for the purpose of becoming stupefied or intoxicated tobacco is used. The "firebrand" mentioned by Las Casas was "a kind of musquetoon packed of a dry leaf, which the Indians lit at one end while they sucked it or inhaled it from the other. These musquetoons were called Tabacos."[5]

Nadaillac says it is here easy to recognize the cigar of the present day, "of which the shape has had but slight modifications." The same could with equal accuracy be said of the cigarette. Cigars and cigarettes appear so common in all Spanish America as to cause a strong presumption that one or other was intended, though the early references are invariably indefinite.

Las Casas, according to Helps, states that the Indians when questioned about imbibing tobacco smoke said that it took away fatigue,

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[1] Marquis de Nadaillac, Les Pipes et le Tabac; Matériaux pour l'Histoire Primitive et Naturelle de l'Homme, 1885, p. 498.

[2] Arthur Helps, The Spanish Conquest in America, I, p. 125.

[3] John Harris, Columbus's First Voyage, Voyages and Travels, I, p. 5, London, 1705.

[4] Arthur James Weise, Discoveries of America to the year 1525, p. 120, New York and London, 1884.

[5] Les Pipes et le Tabac; Materiaux, etc., 1885, p. 498.

and that he has known Spaniards in the island of Hispaniola who adopted the same habit, and who, being reproved for it as a vice, replied that it was not in their power to leave it off. "I do not know," he adds, "what savor or profit they found in them (tobacos)."[1]

Millions of people throughout the world still sympathize with this sentiment. The habit has increased until it has encircled the earth, and to-day there is scarcely a race which has not adopted the pipe in some form, though not always confining themselves to tobacco. Opium is a rival to it in some parts of the East, and hasheesh (*Cannabis sativa*), an East Indian hemp, is smoked in India for its intoxicating properties. Some idea may be gained of the consumption of tobacco from the production of the manufactured article in the United States in 1897, which for smoking tobacco, cigars, and cigarettes amounted to the enormous sum of 371,705,148 pounds. How many of those who consume this tobacco ever consider "what profit they found in it?" There are many, who agree with Benzoni, of Milan, who, about 1541, said, "See what a pestiferous and wicked poison from the devil this must be. It has happened several times to me that going through the provinces of Guatemala and Nicaragua I have entered the house of an Indian who had taken this herb, which in the Mexican language is called tobacco, and, immediately perceiving this sharp, fetid smell, I was obliged to go away in haste and seek some other place. In La Espana and other islands when their doctors wanted to cure a sick man they went to the place where they were to administer the smoke, and when the patient was thoroughly intoxicated by it the cure was mostly effected."[2]

To many smoking is only a habit admittedly without profit; to others it is a "pestiferous weed;" to others again smoking is a solace and unfailing comforter in solitude or sickness; to its votaries it is often a nerve tonic of priceless value in times of great mental excitement, and a sedative in favor of which too much can scarcely be said.

Speaking of the messengers of Columbus who first witnessed smoking, it is interesting to note the opinion of Washington Irving, who speaks of tobacco as a weed which "the ingenious caprice of man has converted into a luxury in defiance of the opposition of the senses."[3]

Bernal Diaz, who was first with Juan de Grijalva, in 1518, on the coast of the mainland of the continent, and who appears also to have been, in 1517, with Francisco Hernandez de Cordova in his expedition, accompanied Cortez throughout his wonderful march to the City of Mexico. Of his early history little appears known, though it is supposed he was a foot soldier. The historian of the conquest, and thoroughly familiar with the daily events of the period, he wrote about

[1] The Spanish Conquest in America, New York, 1856, I, p. 125, referring to Historia de las Indias, MS., Book I, Chap. 40.

[2] Gerolamo Benzoni, History of the New World, 1541–1556, pp. 80, 81, 82 (Hakluyt Society).

[3] The Life and Voyages of Christopher Columbus, p. 129, referring to Navarette, Primer Viage de Colon, p. 51.

1568, and in the light of contemporary accounts there is little doubt that many of his references to the natives using "perfumes" and "incense" related to the practice of smoking tobacco or other plants. It is not intended to deny that incense or perfume was used in the temples of Mexico or among the natives upon occasion, but it is contended that these terms, where used by the Spanish historians, referred generally to what we now describe as smoking, rather than to what is understood by the term perfuming or incensing. Upon several occasions where these words are employed contemporaneous writers are so clear in their references to tobacco smoking as to leave little room for doubt. Spanish descriptions can be better appreciated when it is remembered that the practices referred to were novel to the writers, and the only thing to which they could liken it was the incense of the church, with which they were all familiar. The Spanish references to the smoking of tobacco are apparently confined to its employment by the great "lords" after their dinners, though many of them point to the use of tobacco in conjunction with other things, such as liquid amber, etc.

It must not be forgotten that ceremony and the ceremonial observance of all serious events in life occupied a great part of the Mexicans' time, and the same was the case with the aborigines to the north of Mexico. It will be shown that tobacco was later the plant almost invariably smoked at solemn and ceremonial councils with the whites throughout the continent. In Mexico and to the northward for an indefinite distance there appears always to have been a mixture of herbs used in local ceremonies, as is yet the case in some of the Pueblo dances, especially those of Moki. Juan de Grijalva, the discoverer of Mexico, who died in 1527, according to Diaz, embraced the natives "in token of peace, gave them strings of beads, and as it is customary to make amicable presents in amicable treaties, they [the natives] came with fish, fowl, and vessels with lighted coals to fumigate us with incense;" and at what is now St. Juan de Ulloa, he says, "upon our entering [the temple] they came to us with their pots of incense, but we could not endure it, being disgusted and grieved at the sight and the horrid cruelty of their sacrifices."[1]

The ingredients of this "incense," if Clavigero be correct, were not such as to recommend it to the favor of Europeans, and fortunately do not appear to have survived to our time. He says: "The priests took large quantities of poisonous insects, such as scorpions, spiders, and worms, and sometimes even small serpents, burned them over the stove of the temple, and beat their ashes into a mortar together with the soot of the ocotl [a species of very aromatic pine], tobacco, the herb ololimbqui, and some live insects."[2]

That this offering was identical with that of the pipe, so common on the northern continent at the end of the last century, is shown by the

[1] Diaz, True History of the Conquest of Mexico, pp. 17, 20, London, 1800.

[2] Clavigero, History of Mexico, II, p. 44, Philadelphia, 1817.

same writer, who says: "These offerings of incense were made also by the women to the idols, which was not confined to an act of religion to their gods, but also a piece of civil courtesy to lords and ambassadors."[1]

Diaz says that upon a certain occasion in the island of Cozumel (1519), the Spaniards having been attracted to a certain temple, "the Indians were found burning odoriferous resins like an incense,"[2] and later he states that the Mexicans sent their "ambassadors with vessels of incense which they offered us and with which they fumigated Cortez."[3] This function is repeatedly referred to during the march, as occurring with the Tlascalans, the Cholulans, and at the city of Quivistlan, nor was it confined to offerings to Cortez, but to whoever was the leader at the particular time. We encounter the same ceremony offered at Villa Rica to Escalante, who was there "fumigated." The most casual consideration of this practice shows so great an analogy between these "incense burnings" and "fumigations" (especially as tobacco is mentioned among the ingredients composing it), and the calumet dances and offerings to leaders, not only of the French on the Mississippi and the Great Lakes, but also to the English along the Eastern seaboard, as to amount to conviction that the offerings in many cases was of the pipe.[4]

Four days after the arrival of the army in the City of Mexico Cortez and Montezuma visited the temple and witnessed the offering of incense to the war gods,[5] and it is yet observable at Moki in the dances, where they invariably offer smoke to their idols, the ceremonies of the pipe being observed by all present with great solemnity and decorum. The head chief is attended by an assistant of nearly like rank, who ceremoniously lights the pipe, and with a certain form and set words hands it to the chief, who blows the smoke of the pipe to the world quarters and over the altar.

At times offerings were made by "those who happened to be in danger from stumbling or slipping or on a journey." Incense offerings, Clavigero says, "were made four times a day—at daybreak, midday, sunset, and midnight. They used copal [*Bursera*] or some other aromatic gum, and on certain festivals employed chapopotli or bitumen of Judea,[6] which was also used by the women to clean their teeth with." Similar practices are noted later on the Mississippi among the Natchez, whose offerings were made to the sun, and the Indians of Virginia, a century afterwards, were said to make offerings of tobacco in setting out on a journey.

The censers of the Mexicans were commonly made of clay, but they

[1] Clavigero, History of Mexico, II, pp. 46, 58, Philadelphia, 1817.
[2] Diaz, True History of the Conquest of Mexico, p. 36, London, 1800.
[3] Idem, pp. 49, 57.
[4] Idem, pp. 69, 86, 105, 109, 118.
[5] Idem, p. 143.
[6] Clavigero, History of Mexico, II, pp. 27, 43, 44, Philadelphia, 1817.

also had them of gold, and no house was without them nor wanted idols.[1]

These censers or pipes and idols or fetiches appear to the writer the same things under different names, the variance being due to difference in time and to the nationality of those describing the one and the other. Clavigero on one occasion refers to ambassadors making their offerings "by touching the earth with their hands,"[2] which Antonio de Solis describes minutely in his reference to the ambassadors from Tlascala, "who every now and then stopped and made signs of respect with humility toward the quarters, bowing their bodies till they touched the ground with their hands; then, raising themselves and putting them to their lips, paid greater respect with the smoke of their censers."[3]

This is a similar exhibition to that spoken of when Cortez made peace with the Cacique of Tabasco, after first repulsing an embassy of an inferior quality of persons who returned in numbers with their ornaments, and, having approached with great submission, they perfumed him "with their fire pans, in which they burned gum anime (a white resin), gum copal, and other sweet scents."[4]

These savages "in their festival given in honor of their war god, Huitzilopochtli, were, by permission of Alvarado, allowed to come unarmed, and having done so, were set upon by his orders and not an Aztec was left alive."[5]

These natives were idolatrous and low among the races of men, according to the belief of the period, and the punishment of death was considered light for their inherited wickedness; yet some of the Spanish practices are as barbarous as anything noted of the Aztec, especially that of dressing their wounds with the fat of dead Indians, to which Diaz quaintly refers, a practice apparently common at that period, for, according to Biedma, De Soto's soldiers, about 1540, who were wounded "had their wounds dressed with the fat of the slain, because our medicine was burnt with the baggage."[6]

In fig. 3 is again seen a conical object, similar to that on the Palenque tablet, which Prof. Cyrus Thomas takes to be a cigar. Its similarity to the primitive conical pipe is, however, so striking as to impress one with the idea that this figure, wherever encountered, is intended for a pipe. The illustration is taken from The Manuscript Troano, Plate XXI,[7] and is doubly interesting because antedating European contact.

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[1] Diaz, True History of the Conquest of Mexico, I, pp. 44, 261.

[2] History of Mexico, p. 281.

[3] Antonio de Solis, History of the Conquest of Mexico, p. 158, London, 1724.

[4] Idem, I, p. 64.

[5] William H. Prescott, History of the Conquest of Mexico, II, p. 282, Philadelphia, 1860.

[6] B. F. French, Expedition of Hernando de Soto, Historical Collections of Louisiana, p. 103.

[7] Cyrus Thomas, Contribution to North American Ethnology, V, p. 134, fig. 46, U. S. Geographical and Geological Survey.

All early references to smoking are exceedingly indefinite, due to the writers trying to convey to their readers their impressions of something entirely novel, and consequently most difficult to describe for want of something with which to compare it.

It must be admitted that the early references to smoking in America, while showing it to be a common practice among the Mexicans, so far as known to the writer do not suggest the rectangular pipe. All Spanish American people smoke the cigarette or cigar. As early as 1752 it was said of the natives of Carthagena: "Every one smokes, men and women alike, without distinction of age or rank. They *petun* everywhere and on all occasions. The women hold in their mouths a piece of lighted tobacco, from which they draw the smoke for quite a length of time without letting it go out and without the fire inconveniencing them, and one of the greatest acts of friendship which they can evidence to a person is to light the tobacco for them."[1]

Fig. 3.

MEXICAN SMOKING.

From The Manuscript Troano.

This refers apparently to cigar or cigarette smoking, which was probably the survival of a native custom.

Edward B. Tylor says "the Mexicans were cultivating tobacco when the Spaniards invaded the country, and had done so for ages; it had gotten its name from the language of Haiti, meaning not the tobacco itself but the cigars made of it."[2]

There is no doubt that tobacco was cultivated; but only to a limited extent, prior to the Spanish invasion. As soon as the conquest was accomplished the Spaniards put the natives to work in mining the precious metals and in growing tobacco, for which there was a constant and increasing demand.

De Solis says of Montezuma: "He used to smoke tobacco perfumed with liquid amber [*Liquidambar styraciflua*, or sweet gum], and this vicious habit passed for a medicine with the Indians, which withal had somewhat in it of superstition, for the juice of this herb was one of the ingredients with which the priests were worked up into madness and fury as often as they were obliged to prepare themselves by losing their understanding to receive the devil's oracles."[3]

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[1] Antonio de Ulloa, Voyage Historique de l'Amerique Meridionale, Book I, p. 35, Amsterdam and Leipsic, 1752.

[2] Anahuac, p. 228, London, 1861.

[3] History of the Conquest of Mexico, Book III, p. 84, London, 1724.

Clavigero, an unusually well-informed writer, who lived among the natives of Mexico for thirty-odd years, about the middle of the last century, referring to the early Mexican practice of smoking, says: "After dining the lords used to compose themselves to sleep with the smoke of tobacco. This plant was greatly in use among the Mexicans. They make various plasters with it, and took it not only in smoke at the mouth, but also in snuff at the nose. In order to smoke it they put the leaves, with the gum of liquid amber and other hot, warm, and odoriferous herbs, into a little pipe of wood or reed, or some other more valuable substance. They receive the smoke by sucking the pipe and shutting the nostrils with the fingers, so that it might pass by the breath more easily toward the lungs. * * * But what ought to excite still greater wonder is that, although the use of tobacco is now so common among those natives who formerly despised it, it is now so rare among its inventors that there are extremely few of the Indians of New Spain who take it in smoke, and none at all who use it in snuff."[1]

The more closely the manners and customs of the Aztecs and other natives of Mexico are studied the greater is found to be the similarity between them and the northern Indians, the real difference being that the Mexican has been described in glowing terms as possessing a well-organized government, whereas the prosaic Indian has been represented and treated very much as a savage, having no good qualities. Dr. J. Walter Fewkes has found among the Moki Indians of New Mexico a cigarette, which answers completely that described as being used by the Mexicans. It is a small reed, not over 2½ inches long, into which they pack tobacco; a band of some fabric is bound around it and sewed into the reed, leaving a flap hanging down by which to hold it. These cigarettes are found in large numbers in the sacrificial caves in the vicinity, and appear to be a survival of one of the most primitive of smoking arrangements. The natives of Mexico are fond of a weed called *Mariguana* (?), for mixing with the tobacco in their cigarettes, which when it is smoked and inhaled by them is said to produce a hilarious spirit in the smoker.[2]

A curious custom is related of the people of Yucatan. The children at a particular period made offerings to certain animals, which in a measure were considered as their sponsors through life. This offering was "made of a certain gum of pleasant smell, called copal, which they burn as an incense upon an altar. These animals were wild beasts, which were supposed to have assumed responsibility for the children who had been exposed in certain localities in their earliest infancy, and were known by the tracks found near them in the morning after a night of exposure."[3]

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[1] Clavigero, History of Mexico, II, p. 263, translated from Italian by Charles Cullen, Philadelphia, 1817.

[2] St. Louis Globe-Democrat, November 18, 1897.

[3] John Harris, History of the Buccaneers of America, Voyages and Travels, II, p. 823, London, 1705.

Prescott says the pipes used by the Mexican were "made of varnished and richly gilt wood, from which he inhaled sometimes through the nose, at others through the mouth, the fumes of an intoxicating weed called tobacco, mingled with liquid amber."[1]

Fig. 4.
MEXICAN SMOKING.
After Kingsborough, Vol. II, p. 84.

Diaz, however, identifies them "as three little canes highly ornamented, containing liquid amber mixed with an herb called tobacco, which when brought" to Montezuma "he took a little of the smoke of one of these canes and then laid himself down to sleep."[2]

Kingsborough illustrates, in his great work on the "Antiquities of Mexico," two figures of persons who appear to be smoking pipes, though in the text he does not refer to them as such. Fig. 4 appears to be a warrior who is dressed in netting with large mesh. He wears a necklace of claws, and in his mouth appears to be a pipe; only the head of the figure is here reproduced. The second person (fig. 5) holds in his hand a pipe, and has in the left hand, apparently, a bouquet; the object in the right hand Kingsborough refers to as a cane. He says these figures are scantily clothed to show their confidence in the field, as they are certain to return with sufficient booty to weigh them down.[3]

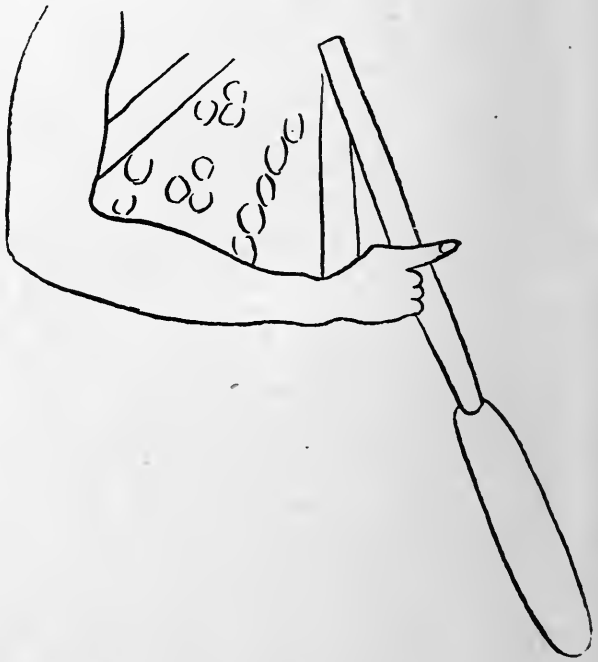

Fig. 5.
MEXICAN HOLDING PIPE.
After Kingsborough, Vol. II, p. 84.

Clavigero speaks of the Mexicans using "pipes or reeds" containing tobacco and liquid amber and "which were beautifully varnished."[4]

According to Bernal Diaz, as quoted by Bancroft, these pipes were painted and gilt.[5]

[1] William H. Prescott, History of the Conquest of Mexico, II, p. 126, Philadelphia, 1860.
[2] True History of the Conquest of Mexico, p. 140, London, 1800.
[3] Antiquities of Mexico, II, p. 84.
[4] History of Mexico, I, p. 283.
[5] Hubert Howe Bancroft, The Native Races of the Pacific States, II, p. 178, San Francisco, 1874.

Diaz also says that sweet canes filled with tobacco and mixed with liquid amber were sold in the city.[1]

Montezuma's sleep differed but little from that of the Indian who slept stupefied from the inhalation of the fumes of tobacco, a practice quite commonly adopted among many of the American Indians, notably those along the Pacific coasts, and whose habits, from geographic location, we would naturally expect to find similar to those of their neighbors, and from whom there is reason to suppose they copied the habit, even if they did not receive it from the Spaniards. Clavigero distinctly implies the similarity of the Mexican habit to what is known to exist north of Mexico. He says "they receive the smoke by sucking the pipe and shutting the nostrils with their fingers, so that it might pass by the breath more easily toward the lungs."[2]

Even as early as 1541–1556 Benzoni, of Milan, tells how slaves brought by the Spaniards "from Ethiopia preserved the leaves of a plant which grows in these new countries which was picked in its season, tied up in bundles, and suspended by them near their fireplaces until very dry; to use them they take a leaf of their grain (maize), and, one of the other plant being put in it, they roll them tight together." He then describes the inhalation of this, which is neither cigar nor cigarette, though having properties of both, and says: "So much do they fill themselves with this cruel smoke, that they loose their reason and fall down as though they were dead, and remain the greater part of the day or night stupefied, though others are content with imbibing this smoke to make them giddy and no more."[3]

Nicolas Monardes, of Seville, was the first, apparently, who spoke of the tobacco plant by its present name. In De Simplicibus Medicamentes, Antwerp, 1574, which is translated into French in Historie des Drogues, Lyons, 1602, by A. Colin, he, as all others have done, discussed its properties along with those of other medicinal plants. He refers to copal and anime, both of which were gums which gave off strong odors when burned, and were also used in the sacrifices in the temples and were held to the noses of the Spaniards when they came to the country, as an incense,[4] and were at times used in connection with tobacco, as were other gums, such as storax, tacamahaca, and liquidamber,[5] the latter of which was obtained by making incisions through the bark of the tree, by which means a resin exuded, and by mixing it with the powdered bark it gave a stronger odor.[6]

The tobacco plant undoubtedly owes its great popularity to the wonderful properties which were early ascribed to it, chief of which Mo-

[1] Hubert Howe Bancroft, The Native Races of the Pacific States, II, p. 144, San Francisco, 1874.

[2] History of Mexico, II, p. 262.

[3] Girolamo Benzoni, History of the New World, p. 80 (Hakluyt Society).

[4] Nicolas Monardes, Histoire des Medicines Simples, p. 104, Lyons, 1602.

[5] Idem, p. 506.

[6] Idem, p. 520.

nardes says, was its curative qualities with wounds. He further says it was first carried to Spain as much for its beauty and ornament in gardens as for its virtues.

"The name tobacco was given to it by the Spanish from the island of the same name, and while only the use of the leaves of the plant is advised, seed was at times utilized when the leaves were not available. These leaves were strung together, hung in the shade and dried, and used whole or powdered, and were considered good for headache, lockjaw, toothache, coughs, asthma, stomach ache, obstructions, kidney troubles, disease of the heart, rheumatism, the poisoning from arrows, carbuncles, polypus, consumption," etc.[1]

The methods of using the plant were almost as numerous as the diseases for which it was considered a cure, a few of which are enumerated as follows: To heat the leaves and apply them to the parts affected; to rub the teeth with a rag dipped in the juice; wrapping a leaf into a pill and inserting it in the tooth; boiling the leaves; decoctions of its leaves; made into a sirup; smoking it by the mouth; reducing the leaves to ashes; pounding the green leaves and mixing them with oil or steeping them in vinegar; if leaves are not to be had, the powder may be used as a poultice; in fomentations; by smoking through the nose; rubbing the leaves on the afflicted parts; inserting the juice into the wound or applying bruised leaves to the wound.

Monardes says: "Tobacco smoke was received by the nose, and in smoking the priests received the smoke through little tubes or canes, and after they tumbled as if in ecstacy. Upon recovering, they related what they had conversed about with the evil spirits, and gave ambiguous replies to their followers. In addition to this, the people take the smoke both by the mouth and by the nose for pleasure when they desire to see the future in their dreams. For just as the devil is an imposter and knows the virtue of herbs, he has posted them on the power of this plant, for by the illusions of their dreams he deceives the people miserably."[2]

"The Indians, tired from carrying their burdens or from other work, inhaled tobacco smoke and fell suddenly as though deprived of reason, and when they recovered found themselves refreshed by their sleep and their strength restored. The Ethiopians, carried to these parts as slaves, wishing to lighten their condition, inhale too much, which causes their masters to chastise them severely, and they burn their tobacco to keep them from using so much, which leaves as a sole alternative to use it in secret. The Indians use tobacco to keep away thirst and hunger, and do it in the following way: They burn certain river shells, then powdering them as fine as chalk, they mix them with an equal quantity of powdered tobacco and chew it until it forms a solid mass; then they make it into pills slightly larger than a pea; then, drying it again,

[1] Girolamo Benzoni, History of the New World, p. 529 (Hakluyt Society).

[2] Nicolas Monardes, Histoire des Drogues, p. 535, Lyons, 1602.

they use it when needed. In making a journey through a desert country, where food and drink are scarce, they put these pills between their lips and teeth and suck the juice, and when one is gone they replace it with another through a journey extending over three or four days, during which time they say they have not been hungry or thirsty."[1]

The inhabitants of Brazil were the first to carry the seed of this plant to Portugal, and called it petum. The French called it herbe la reine, because Jean Nicot, formerly Portuguese ambassador, gave the seed to the Queen Mother and explained to her its virtues and properties. Others called it herbe sainte, because of its great power, and "it appears to me," Monardes says, "to answer very well the description of black henbane."[2]

Monardes evidently refers to cigars and pipes in speaking of tubes proper to be used by asthmatics. He says: "There are brought from New Spain certain tubes of cane, greased inside and outside with a certain gum, which, in my opinion, is nothing else than juice of the tobacco, for it goes to the head. On the side called bitumen they burn the tube, while on the other side they put it in the mouth and smoke by inhaling."[3]

Wafer describes a curious smoking custom among the people of Darien in 1681. "The tobacco leaves," he says, "are rolled up sideways until they make a roll as big as one's wrist and two or three feet in length. A boy lights one end, wetting the part next to it to keep it from wasting too fast. He puts the lighted end in his mouth and blows into the faces of the company, even if there should be two or three hundred, and they hold their breath as long as possible."[4] Though among the Maya people the pipe is not now smoked, and it is doubtful if it ever was.

These authorities are sufficient to establish the fact that the islanders and Mexicans were acquainted, not only with the cigarette but also with the cigar, though the "reed" of the Mexicans approaches more nearly the pipe or tube than either. This reed pipe is noted in 1540 on the lower Colorado by Alarcon, the natives being described as carrying "small reed tubes for making perfumes, as do the Indian tabagos of New Spain,"[5] and if cigarettes are referred to, custom has changed but little, and is still in daily use by the Zuni and Moki of New Mexico. "The doctors cured their patients by blowing on them with thin tubes

[1] Nicolas Monardes, Histoire des Drogues, pp. 537, 538, Lyons, 1602.

[2] Idem, p. 541.

[3] Idem, p. 698.

[4] Lionel Wafer, A New Voyage and Description of the Isthmus of America, p. 102, London, 1699.

[5] Hernando Alarcon, Relation de la Navigation et de la Decouverte, translated by H Ternaux Compans, p. 322, Paris, 1838. Also in Hakluyt's Voyages, III, p. 514, London, 1810, reprint of edition of 1600.

of reed, which were worn on one arm, while little pieces of deer bone used for scraping off the sweat were worn upon the other.[1]

Prescott refers to "pipes of tortoise shell and silver, containing tobacco mixed with aromatic substances, which were offered to the company by the Mexicans, whom, he says, compressed the nostrils while they inhaled the smoke,"[2] showing that its purpose was to stupify the smoker. Dr. Fewkes, excavating during the summer of 1895 at the ruins of Sikyatki, in northeastern Arizona, found several tubes or pipes much resembling cigarette holders, and as the excavations here showed that only a primitive condition existed at the time of the abandonment of the town or pueblo, the presumption is in favor of its antiquity, and may reasonably be considered pre-Columbian. These tubes, which were straight, though the bowl was much larger than the stem, were made both of stone and of pottery.

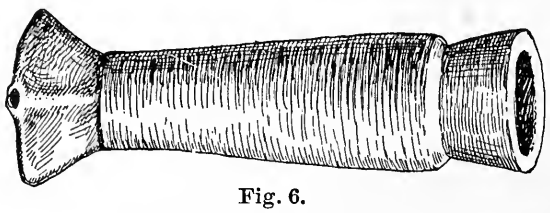

Fig. 6.
ANCIENT PUEBLO POTTERY PIPE.
Sikyatki, Arizona.
Cat. No. 156154, U.S.N.M. Collected by Dr. J. Walter Fewkes.

Fig. 6 is a pottery specimen, which might well answer the description of one of Montezuma's varnished pipes, referred to by Prescott. It is 2½ inches long and about three-fourths of an inch wide across the mouthpiece. The clay from which this pipe was made was finely pulverized, and so far as can be seen contains no ground shell or sand, such as is usually found in aboriginal pottery, and which was supposed to be intended as a tempering, to prevent cracking in drying or heating. On each of the ends of this specimen, for a distance of one-half an inch, there is a perfectly smooth and dark brown, almost black, glazed surface. The raised portion of this tube gives the effect of a jacket shrunken on, which is covered by a series of closely incised lines, forming a band, as though made by wrapping a thread on the clay while it was in the plastic condition. This pipe might well be taken for varnished wood by anyone not familiar with the material.

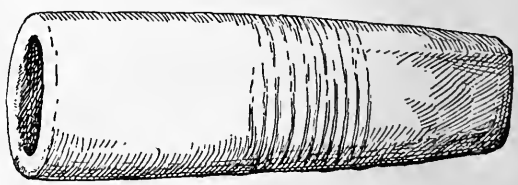

Fig. 7.
ANCIENT PUEBLO POTTERY PIPE.
Sikyatki, Arizona.
Cat. No. 156130, U.S.N.M. Collected by Dr. J. Walter Fewkes.

Fig. 7 is also a pottery tube from Sikyatki, of pinkish red color, quite symmetrical in shape, the type of which is not dissimilar to like objects found as far north as the State of Ohio. The type is common throughout the whole pueblo region. The specimen figured has a dull glazed surface, without polish, and similar thread marks to those referred to on fig. 6.

[1] Hernando Alarcon, Relation de la Navigation et de la Decouverte, p. 307, Paris, 1838.
[2] History of the Conquest of Mexico, I, p. 153, Philadelphia, 1860.

These thread marks look as though the thread wrapped around the plastic clay had been left on while the pottery was going through the cooking process, being burned off in the baking.

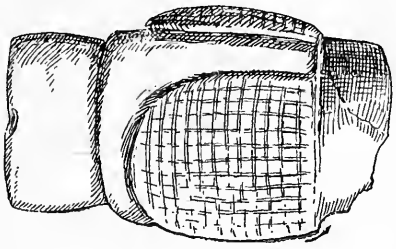

Fig. 8

ANCIENT ORNAMENTAL PUEBLO POTTERY PIPE.

Sikyatki, Arizona.

Cat. No. 156131 U.S.N.M Collected by Dr. J. Walter Fewkes.

Fig. 8, from Sikyatki, and also made of pottery like the others, is a pipe of a dull gray color. It is elliptical in cross section, and though a part of the bowl upon one side has been broken away, sufficient remains to show its original form. On the broader sides of this pipe upon the band there is a slightly raised surface, upon which are intersecting lines, evidently cut into the earthenware subsequently to its baking. This specimen looks as though the incised marks were intended to represent conventional birds' wings, though it may well be that some other significance attaches to it.

Fig. 9 is from the pueblo of Taos, in New Mexico. Dr. Fewkes obtained it by purchase, and therefore it is impossible to speak positively concerning its age, though it belongs to the same type as the preceding specimens, and if of a different period the characteristics remain constant. It is of glazed black pottery, containing a slight admixture of finely pounded shell, its lines of ornamentation being cut through the surface subsequent to the firing of the clay. It is 6 inches long, having a greatest diameter of 1 inch, and a circular cross section.

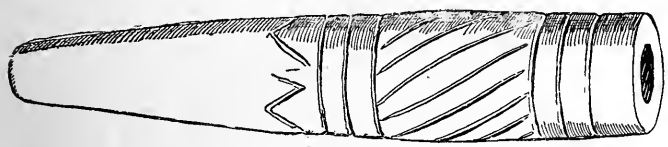

Fig. 9.

PUEBLO POTTERY PIPE.

Taos, New Mexico.

Cat. No 176391, U.S.N.M. Collected by Dr. J. Walter Fewkes.

Fig. 10, a light gray earthenware from Nambe, New Mexico, was also obtained by Dr. Fewkes by purchase. It is 3 inches long and for two-thirds of its length is 2 inches wide, due to the wing-like projections attached to the elongated conoidal tube. These wings, while apparently intended for ornament, would answer perfectly for holding the pipe when heated. The type is primitive and common to the territory of the cliff dwellers.

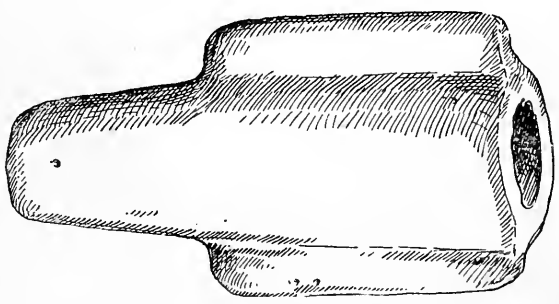

Fig. 10.

PUEBLO POTTERY PIPE.

Nambe, New Mexico.

Cat. No. 176395, U.S.N.M. Collected by Dr. J Walter Fewkes.

Fig. 11, a hard-burned red pottery tube from Jemez Springs, New Mexico, collected by Mr. J. M. Shields, belongs to the form common

throughout the southwestern United States. The pipe on its outer surface is covered by peculiar protuberances, not unlike large coffee grains set on edge, as though the clay in its plastic condition had been pinched up by the thumb and forefinger. A pipe having similar coffee-like grains upon its surface is in the collection of Mr. Andrew E. Douglass, of New York, and is said to have been found 6 feet below the surface of a bird-shaped mound in Eastman, Crawford County, Wisconsin. The latter specimen, however, is of the rectangular type, with an unusually large bowl, the pottery of which is a mixture of clay and shell.

There are a number of pipes of the Pueblo type in the collection of the University of Pennsylvania, which were found in the ruins of the cliff dwellers of the Mancos Canyon in Colorado, one of which, $3\frac{1}{4}$ inches long, has a wooden bowl with a separate stem, made apparently of catlinite; yet another, with slightly shorter tube, has a catlinite bowl with a bone stem. The stems of each are held in place by the gum of the grease wood (*Sarcobatus*). There is also in the same collection a short, hard-burned pottery tube of this type, said to be from ancient Mexico, upon the surface of which there is a rudely modeled head of a duck, the eye being pierced through. The stem of this latter pipe has been formed by leaving a stalk of grass running through the clay into the bowl, so that in burning, the woody fiber disappears, leaving a clear channel for the smoke to pass through, which is a feature common to pipes of the Southwest. During the summer of 1897, Dr. Fewkes, at Four Mile Ruin, near Fort Apache, in Arizona, found a number of pipes of the cigarette type, one of which is made from a stalagmite. The specimens from this ruin do not appear, however, to be so ancient as those from Sikyatki. The writer has seen a photograph of a stone pipe excavated from an ancient grave on the "N. H." ranch, in New Mexico, collected by the Rev. Dr. Niess, of an elongated conical shape, very similar to the pipes from the coast of California, upon which are four longitudinal color stripes corresponding to the cardinal quarters. This pipe is about 8 inches long and similar to that represented on the Palenque tablet, and in the Manuscript Troano. The only other pipe having artificial color which has come under the writer's notice is a hard-burned pottery specimen from the cliff ruin of Mancos, Colorado, in the collection of the University of Pennsylvania, the bowl of which has been broken, the interior being smeared with some white color, probably connected with ancient burial customs. The University of Pennsylvania also possesses a number of bowls of tubular pipes, some made of shale and others of slate, the stems of which were evidently held by means of some foreign substance, as was the case with the pipes from California; and there are indications that in the middle Atlantic Coast States the same method of attaching the stem was

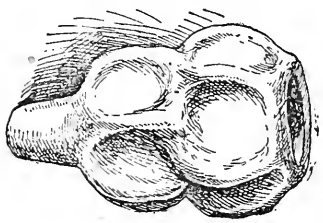

Fig. 11.
PUEBLO POTTERY PIPE.
Northern New Mexico.
Cat. No. 98093, U.S.N.M. Collected by J. M. Shields.

employed. At Tusayan, New Mexico, as noted by Dr. Fewkes—and his remarks would apply equally to North America generally—"Indian customs are handed down through long periods with but slight variations. At Tusayan, native tobacco (*Nicotiana attenuata*) was used in the ceremonies. The Indians there smoke, however, the leaves of various plants, as they use various mixtures in their religious rites. The one who controls the pipe must light it and hand it immediately to the chief, friendly words being exchanged between the two. The chief blows the smoke toward the four cardinal points, upward and downward over the altar. They believe that the smoke is the cloud symbolized by it. They use the utmost care in making the mixture of tobacco which is to serve for this sacred purpose, and the pipe must be lit with fire produced in the manner prescribed by the rite. All ceremonies commence with this brotherly smoking."[1]

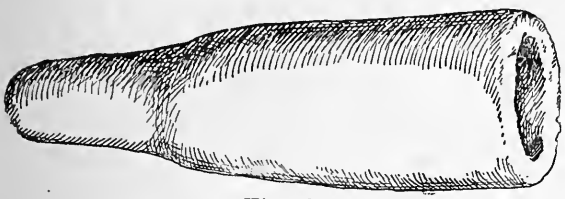

Fig. 12.
ANCIENT CLAY PIPE.
San Juan River, New Mexico.
Cat. No. 19791, U.S.N.M. Collected by Charles Aldrich.

Dr. Fewkes informed the writer that the plants of which the mixture used in the pipe was composed were valued largely according to the distance from which they came, and a plant from Colorado, which he gave a Pueblo Indian in New Mexico, was said to be good pipe medicine to smoke for that reason. In ceremonial smoking, or, in fact, in any of the more serious functions, the white man's manufactured tobacco was not considered valuable. "The xochiocotzotl, commonly called liquidambar, is the liquid storax of the Mexicans. It is a great tree, its leaves being similar to those of the maple, white in one part and dark in the other, disposed in threes. By an incision in the trunk they extract that precious resin called by the Spaniards liquidambar, and the oil of the same name is still more odorous and estimable. They also obtain liquidambar from a decoction of the branches, but it is inferior to that which is distilled from the trunk."[2]

The Sia Indians are said to smoke a thin cigarette, lighted from a long stick; the boys of the Sia were, however, never seen smoking.[3]

In the sixteen-song snake dance of the Moki Indians, both before the dance begins and after it is over, Dr. Fewkes found that the shape of the pipe smoked had no significance; but the pipe which was employed at the end of the eighth song was invariably one of the old-fashioned tubular conical pipes of the same character as those used by the ancient inhabitants, as evidenced at Sikyatki.

Fig. 12, a pueblo pipe from the San Juan River, New Mexico, collected

[1] Catalogue of the Hemenway Collection in the Historico American Exposition of Madrid, p. 283, Report of the Columbian Historical Exposition, Madrid, 1892.

[2] Clavigero, History of Mexico, I, p. 44, Philadelphia, 1817, translated by Charles Cullen.

[3] Matilda C. Stevenson, The Sia, 11th Annual Report of the Bureau of Ethnology, p. 105.

by Charles Aldrich, is made of black pottery, the clay having been mixed with a large proportion of sand. It is burned extremely hard and molded by hand, the stem hole being made by burning out a stalk of grass left in the plastic clay.

TUBULAR PIPES OF THE NORTH AMERICAN INDIANS GENERALLY.

There is in the U. S. National Museum collection a black pottery specimen of the tube, about the shape of a cigar and the size of one (Cat. No. 47759) from San Juan, New Mexico, which is in the Abbott Collection. It is of a dull black color, resembling stone; the upper rim of the bowl, having been cracked, is neatly repaired or reinforced by binding it around with fine sinew thread wrapped until it has formed quite a band. This mode of repair is primitive and interesting as being a probable survival of ancient methods.

Another and unique pipe is a tube in the U. S. National Museum having a square exterior, and is made of black glazed pottery. It was collected by Col. James Stevenson at Santa Clara, New Mexico, and has a rude arrow incised on opposite sides of the tube, the other sides having the rude ornamentation of a bow (Cat. No. 47492).

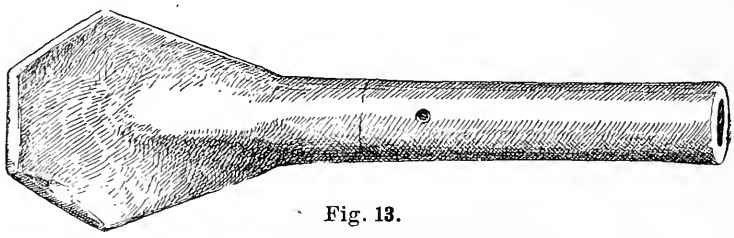

Fig. 13.

TUBULAR IMPLEMENT, PROBABLY PIPE.

Compact slate.

Boone County, West Virginia.

Cat. No. 90713, U.S.N.M. Collected by W. C. Norris.

Fig. 13 is a tubular implement, of a compact variety of slate, collected by Mr. W. C. Norris from a mound in Boone County, West Virginia. This tube is $8\frac{5}{8}$ inches long, with a uniform diameter of 1 inch, the perforation, except at the flattened end, being of a diameter of three-fourths of an inch. This tube unfortunately has been broken, the flattened mouthpiece of which at its widest part measures $2\frac{3}{4}$ inches across, has a thickness of scarcely one-fourth of an inch; through this a perforation about three-sixteenths of an inch in diameter has been drilled into the larger part of the tube. The walls are about one-eighth of an inch thick, the opening having been drilled by means of a hollow metal drill point.

This tube is similar to one figured by Squier and Davis from the neighborhood of Chillicothe, Ohio, which they considered superior to anything of which the present Indian was capable.[1]

There is one of these tubes made of pottery in the Museum of the University of Pennsylvania, $4\frac{1}{4}$ inches long, found in Portage County, Ohio.

[1] Ancient Monuments of the Mississippi Valley, p. 225, Smithsonian Contributions to Knowledge, I.

The writer is inclined to class this tube among the pipes, though he does so with some doubt. It should not, however, be confounded with those carefully polished implements having thin walls bored by means of tubular drills to within one-half or one-fourth of an inch of the end, which are flat, and have one-eighth-inch holes bored through them, and which were probably intended to be used as horns, as they certainly answer that purpose perfectly, giving as they do a strong, clear note. The surfaces of these tubes are finished to a high polish and appear to the writer to be due to the use of tools of civilized men. There is a striking similarity in the mouthpiece of this tube and the specimen figured from the ancient ruin of Sikyatki.

Fig. 14 is "a tube of copper collected by Prof. E. B. Andrews on Mr. George Connett's land, on Wolf Plain, Ohio, which was found with human remains. Professor Putnam describes it as being made of sheet copper hammered over wood, a little hole one-eighth of an inch in diameter being cut or punched to one side of the center of the mouthpiece. The tube, he says, is $5\frac{1}{2}$ inches long and three-fourths of an inch in diameter in the circular part and 2 inches at the flattened end." Professor Putnam calls attention to the possibility of this class of implements being intended for pipes. Tubes found in the collection of the U. S. National Museum intended as horns or pipes vary all the way from 2 inches to 10 inches in length, with a diameter of from one-half an inch to 2 inches. Usually they are made of stone, though tubes of pottery are not unknown. The Indian was as a rule skillful in selecting material for pipes, the larger proportion of which were made from chlorite or steatite, though sandstone, quartzite, and other minerals equally unsuited for pipe making are encountered at times. The cross section of the tubular pipe varies between a flattened ellipsoid and a circle. They are conoidal in their longer diameter, having usually a large bowl gradually decreasing in size to the mouthpiece. While it may reasonably be inferred that the original pipe was a reed, or hollow bone, or a piece of wood split and scooped out, or possibly a horn, there is no doubt that everything capable of holding tobacco has at one time or another been used by American Indians for smoking, instances being known where birch bark, lobster claws, and, most inappropriate of all, stone coal has served for pipe making.

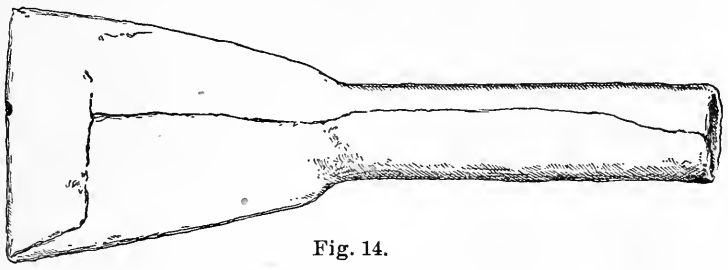

Fig. 14.
COPPER TUBE.
Mound Wolfe Plain, Ohio.
Cat. No. 8993, Peabody Museum. Collected by E. B. Andrews.

Fig. 15 is a pipe made from the metatarsal bone of a deer, than which it were difficult to imagine a more primitive production. It has a length of 7 inches. One end of the bone has been hammered off, while the

opposite end has been cut down to a size which could readily be placed in the mouth, leaving the natural cavity to hold the smoking material.

Fig. 16 shows that the Indian has been taught the frailty of the simple bone when exposed to the heat of the burning leaves. This bone is of the same character as that of the preceeding pipe, and has been reenforced with strips of rawhide wrapped on wet and allowed to shrink. Except the cutting off and wear on the ends of these bones there appears to have been nothing done with either, other than the reenforcement of the hide.

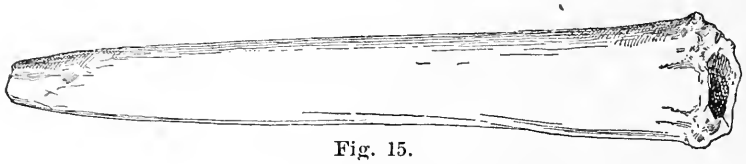

Fig. 15.

BONE PIPE.

Kiowa Indians.

Cat. No. 152940, U.S.N.M. Collected by James Mooney.

The writer is informed by Capt. H. L. Scott, of the U. S. Army, that the pipe used in the medicine dance by the Kiowas, which is held in the summer, is in the custody of the medicine keeper and descended to this tribe from the Arapahoes, who in turn received it from the Crows in the far north. It is straight and made of a black stone. The sacred pipe of the Arapahoes, which has an antiquity, according to their tradition, as great as that of the tribe itself and which is valued beyond price by them, is a straight tube made of a black stone and is at present in possession of the northern division of the tribe, which is in Wyoming. White Beaver, in a letter to Dr. E. A. Barber, of Philadelphia, says, "From 'Medicine Smoke'—big fire, or He-mon-e-gah—a son of the head chief of the Winnebagoes, I yesterday heard a legend of the use of sha-sha or red willow" [*Salix purpurea*], "not tobacco." He refers to the unwrapping of "a pipe made from the shin bone of an elk which was employed at a treaty of peace made between the Winnebagoes and the Sioux, which was only broken when the pipe was polluted by the chah-de—tobacco of a nation or place where the sun rises."

Fig. 16.

COMANCHE BONE PIPE.

Cat. No. 6901, U.S.N.M. Collected by Edward Palmer.

Prince Maximilian says of the pipe of the Assinniboines that it was generally made of blackish stone or dark clay, in which they smoked the herb kinnikinick, or the leaves of the bearberry (*Arctostaphylos uva-ursi*), mixed with tobacco. He refers also to a pipe used by the Indians of the upper Missouri, who employ it on warlike excursions, the bowl and stem of which are in the same line, as a tube.[1]

The Blackfeet use in their pipes the bearberry, which they call "sakakomi," and which in company each person passes to the left.[1]

There appear to be but few exceptions to the rule that the straight

[1] Travels in the Interior of North America, p. 196, London, 1843.

tube was the sacred pipe of the Indian, and that this has been a general and ancient practice may be inferred from finding such tubes throughout the whole country where the pipe was smoked.

Captain Marcy refers to the Comanches being extravagantly fond of smoking tobacco, which they called pah-mo, mixed with the leaves of sumac[1] (*Rhus trilobata*).

Fig. 17 is a serpentine tube from Wilkes County, Georgia, collected by Miss Fannie Andrews. It is 7 inches long, with a diameter of $1\frac{3}{4}$ inches at the widest part. This pipe is very similar in exterior as well as in interior finish to those so often found in the graves on the islands off the coast of California, and in shape differs in no essential from the bone pipe of the Kiowa and Comanche Indians. The tube of this pipe has been drilled its entire length by means of a solid drill point, the bowl and smaller end being subsequently enlarged by means of scraping or gouging with a narrow tool, apparently made of stone, the striæ of the drill point and gouge each being distinctly discernible. Similar specimens are quite common on the coast of California, a few being known to have rude ornamentation of incised lines or designs in low relief. A remarkable peculiarity of this Georgia pipe is shown in the three tracks, apparently of a bird, on the surface, traveling in a spiral direction from the bowl toward the mouthpiece. These three tracks are etched lightly into the stone and probably have some especial significance. Such tracks would indicate those of the turkey at Moki and the direction in which the smoke traveled to the mouth. Two similar tracks are figured in the cavity of a chunkee stone found in a mound at Belmont, near Camden, South Carolina, and represent one track on each side of the hole through the center of the stone.[2]

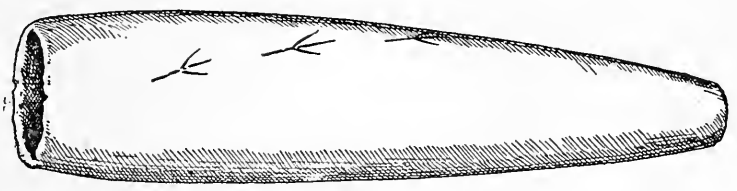

Fig. 17.

ANCIENT STONE TUBULAR PIPE.

Totemic turkey tracks cut on surface.

Wilkes County, Georgia.

Cat. No. 34721, U.S.N.M. Collected by Miss Fannie Andrews.

The enlargement of the smaller end of this tube is evidently for the purpose of inserting a mouthpiece of wood, or bone, or possibly even of stone. The California pipes had mouthpieces of bird bones held firmly in place with bitumen, similar to those of the cliff dwellers which were held with gum of the greasewood. These mouthpieces served the purpose of preventing in a measure the tobacco or plant consumed from escaping into the smoker's mouth.

Fig. 18, a California serpentine pipe of most unusual shape, is $6\frac{1}{2}$

[1] Randolph B. Marcy and George B. McClellan, Exploration of the Red River of Louisiana, p. 102, Washington, 1854.

[2] Bulletin No. 2, University of Pennsylvania, December, 1897, p. 79, plate 5, fig. 2.

inches long, with a diameter of $1\frac{1}{4}$ inches at the mouth of the bowl, which is circular in cross section, though elliptical at the middle, where the greatest diameter is $1\frac{3}{4}$ inches. The bowl and stem are, however, not in the same plane, owing to having been drilled from opposite ends, the perforations being intended to intersect about the middle, at which point, as indicated in the figure, the wall has been perforated. Both bowl and stem openings have been enlarged subsequent to drilling by gouging. Into the stem a hollow bird bone, $1\frac{1}{2}$ inches long, fastened by means of bitumen, served as a mouthpiece. The perforation of the wall would indicate that this was an unfinished article were it not for the mouthpiece, which indicates that this hole in some way was artificially closed, probably with the same bitumen with which the mouthpieces were held in place. The lower hole is perforated from side to side, and one would be inclined to suppose it was intended for the attachment of a string so commonly observed in certain types were it not that this appears to be a unique specimen among pipes of the type which belongs to those having a straight hole from end to end. This lateral hole is a natural cavity in the stone, the edges of which have been smoothed in grinding the surface. Its discovery in the blocking out of the pipe, which was always done before boring the holes, has led to the curve in the specimen being made in order to preserve the cavity, which was evidently retained because of some superstition in connection with it, probably attaching unusual properties to the pipe itself. The California pipes are almost invariably elongated cones similar to the pipe from Georgia (fig. 17) and range in length from 3 to 10 inches. They were ordinarily made of serpentine, though specimens of talcose-slate and steatite were found at La Patera and at Dos Pueblos.[1] The tobacco pipes of the natives of San Gabriel Mission, California, are said to have been made of reeds,[2] from which their conical stone pipes would be a natural development.

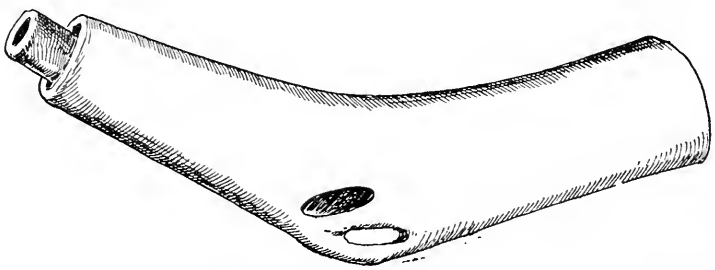

Fig. 18.

STONE TUBE WITH BONE MOUTHPIECE.

Santa Barbara, California.

Cat. No. 20218, U.S.N.M. Collected by S. Bowers.

Venegas (about 1758), referring to stone tubes being employed by the medicine men of California, says: "One mode was very remarkable, and the good effect it sometimes produced heightened the reputation of the physician. They applied to the suffering part of the patient's body the chacuaco" (presumably the conventional tube) "or a tube formed out of a very hard black stone. Through this they sometimes sucked and

[1] Report upon the U. S. Geographical Surveys west of 100th Meridian, VII, Archæology, p. 126.

[2] Edward T. Stevens, Flint Chips, p. 525, quoting California Farmer, May 11, 1860.

at other times blew, but both as hard as they were able. Sometimes the tube was filled with cimarron, or wild tobacco, lighted"[1] [*Nicotiana attenuata*].

The same practice is referred to about 1766, while these same people were still living under primitive conditions. It was said "the priests never abandon the Californian, but on the contrary they redouble their cries, and they are heard on the whole rancheria when the sickness gets to the point where herbs, sweets, chichuaco and cimarron or wild tobacco no longer produce effect."[2]

Professor Putnam's description of smoking by the Klamath Indians would probably apply equally to the smoking of the California or other tubular pipes. He says "it amused me to see an Indian bending back his head to bring the pipe in a vertical position, so as not to lose any tobacco while taking a long draught, which he inhales the longer to enjoy the opportunity, as the pipe must be passed on."[3]

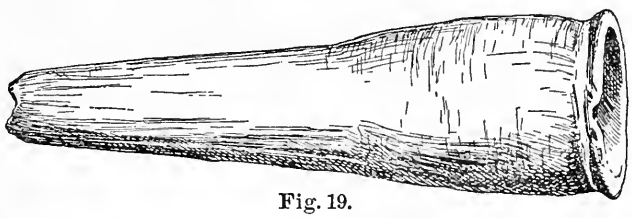

Fig. 19.

UNFINISHED TUBULAR STONE PIPE.

Cook County, Tennessee.

Cat. No. 91681, U.S.N.M. Collected by J. W. Emmert.

Dr. George M. Dawson refers also to straight pipes of steatite, shaped very much like a cigar holder, which are marked with incised lines, found among the Shushwap people at the confluence of the Fraser and Thompson rivers in British Columbia.[4]

Fig. 19, it will be observed, was intended for a tubular pipe, and was found at Newport, Cook County, Tennessee, by Mr. J. W. Emmert. It is of a grayish serpentine, $4\frac{3}{4}$ inches long, with an exterior diameter of $1\frac{1}{2}$ inches at its thickest part. It is, however, an elongated, flattened elipsoidal cone, the raised rim of which is quite unusual and somewhat ornamental. This specimen is in an unfinished condition and therefore doubly interesting, as it shows much of the process by which such pipes were made. The bowl has been excavated to a depth of barely $1\frac{1}{2}$ inches, and the stem hole is bored not over three-eighths of an inch, apparently by means of a stone drill, as the striae are quite irregular, though the cavity of the bowl has been enlarged subsequent to drilling by a sharp-pointed tool, which left longitudinal marks similar to those so commonly noticed in specimens found in the States along the Middle Atlantic as far west certainly as the Mississippi River, along the Missouri, and in the Rocky Mountains. The common drill point of the California coast appears to differ from those used in the East, the former being made of a gritty stone of ovoid shape,

[1] Charles C. Jones, Antiquities of the Southern Indians, p. 363, New York, 1873, quoting Natural and Civil History of California.

[2] Histoire de la Californie, I, p. 133, translated from English, Paris, 1766.

[3] Reports of the Peabody Museum of American Archæology, II, p. 268.

[4] Transactions of the Royal Society of Canada, IX, 1891, p. 12.

several fine specimens of which, some still showing the asphaltum by which they were attached to the drill shaft, are preserved in the American Museum of Natural History in New York City. The surface of this specimen shows distinctly both the circular and the longitudinal striae of the stone or shell scraper with which the form has been given. Pipes of this type with few exceptions, so far as the writer has observed, have been drilled by means of solid drills, though, as showing that there are exceptions at times, Thruston[1] illustrates one partially excavated which was bored by means of a hollow drill.

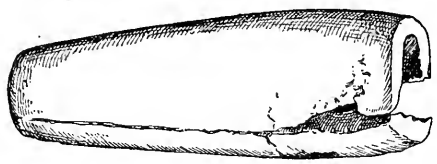

Fig. 20.

TUBULAR PIPE OF SOFT, INDURATED CLAY.

Santa Barbara, California.

Cat. No. 20432, U.S.N.M. Collected by Paul Schumacher.

Fig. 20, though a tubular pipe, differs materially in shape from the usual California type. This one is from Santa Barbara, and was collected by Paul Schumacher, its length being 3 inches, with a diameter varying from three-fourths of an inch to $1\frac{1}{4}$ inches. This tube is made from a clayey substance quite as soft as chalk; in color it is a light pink, and the specimen might well be taken for pottery by a casual observer, or even for catlinite. Mr. Stephen Powers states that the Nishinam Indians of Bear River, California, smoke a wild tobacco called by Prof. Asa Gray *Nicotiana quadrivalvis*, and by Professor Bolander *N. plumbaginifolia*, which they use alone or mixed with the leaves of manzanita (*Arctostaphylos glauca*). Mr. A. W. Chase says the Klamaths cultivate it, which is the only instance of California cultivation. He says the pipe pan-em-ku-lah is generally made of serpentine (of wood nowadays), shaped like a cigar.[2]

Fig. 21.

SANDSTONE TUBE.

Frankfort, Kentucky.

Cat. No. 11572, U.S.N.M. Collected by Robert Peter.

Prof. J. T. Rothrock obtained from the shell mounds in California a tobacco, probably the *Nicotiana clevelandi*, and says the *N. rustica* (now rare) was formerly cultivated there. In Arizona they cultivated the *N. tabacum*, known as Yaqui tobacco, and refers to Gray's saying that *N. quadrivalvis* was cultivated from Oregon to Missouri. He also calls attention to the Hudson's Bay men using the dried leaves of the bear berry to eke out the supply of tobacco.[3]

Fig. 21 is a sandstone pipe 3 inches long, having a greatest diameter of slightly more than an inch. It is from Frankfort, Kentucky, and was collected by Dr. Robert Peter. This tube has been bored through by a one-half inch drill; for approximately 2 inches of its length the

[1] Antiquities of Tennessee, p. 192, fig. 90.

[2] Contributions to North American Ethnology, III, fig. 43.

[3] Letter to Dr. E. A. Barber of Philadelphia, Pennsylvania.

perforation has been enlarged to form a bowl by the usual gouging process the length of the interior. The smaller end of this tube is too large to be comfortably held in the mouth unless it had a mouthpiece of bone, such as was inserted in the California tubes. It is, however, very noticeable in primitive pipes, even such as were apparently held in the smoker's mouth, that it is rare to observe any evidence of wear such as would be caused by the smoker's teeth coming in contact with the surface of the stem. The action of fire upon the inner surface of this tube is quite distinct.

Fig. 22, from Dan River, Virginia, collected by Dr. A. Coleman, is a conical tube of primitive pottery 3 inches long, the larger end being approximately 2 inches across and the smaller end slightly more than $1\frac{1}{4}$ inches in diameter. The clay from which this tube was made has been mixed with coarse quartz sand, a tempering material not uncommon in aboriginal pottery in the eastern central parts of the United States. The walls of this tube are unusually heavy in comparison with those of similar ones of stone, they being about three-eighths of an inch thick, and show the cord marks in the pottery quite distinctly. A tube very similar to the one here figured, but slightly curved in its longitudinal section, was found near Bennings Bridge, in the District of Columbia, and Mr. Clarence B. Moore found, at a depth of 6 feet, in a shell heap on the upper St. Johns River, Florida, an earthenware pipe over 7 inches long in the form of a bent, flattened tube.[1] The characteristics of this latter tube are very much like those of the Bennings Bridge specimens, and there can be little doubt that all of them are tobacco pipes, the pottery having every indication of age. Tubular pipes have also been noted in Rhode Island, and Perkins refers to them in Champlain Valley, Vermont.[2]

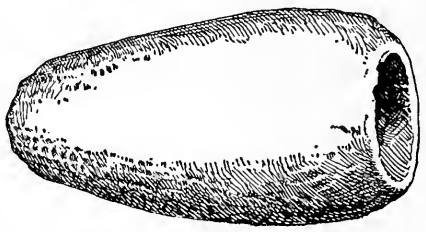

Fig. 22.
POTTERY TUBE PIPE.
Dan River, Virginia.
Cat. No. 16777, U.S.N.M. Collected by Dr. A. Coleman.

Abbott also refers to a tubular smoking pipe from Lawrence, Massachusetts, which he says differs in no particular from those found in California.[3]

The almost endless variety of material from which pipes were made is shown in the case of the Micmac Indians of Nova Scotia, who "sometimes used tobacco pipes made of birch bark, rolled in the form of a cone, and which, of course, are perishable."[4] A tube of this character from a mound in Henderson County, Illinois, made from a brown indurated clay, is in the collection of the U. S. National Museum.

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[1] American Naturalist, July, 1894.

[2] G. H. Perkins, The Calumet in the Champlain Valley, Popular Science Monthly, December, 1893, p. 245.

[3] C. C. Abbott, Primitive Industry, p. 330, fig. 322, Salem, 1881.

[4] J. W. Dawson, Fossil Men, p. 97, Montreal, 1880.

Fig. 23 belongs to another and distinct type of stone tubes and was found in the Etowah Mound, Bartow County, Georgia, and is in the Steiner collection now on deposit in the U. S. National Museum. This object is as symmetrical in outline as it is perfect in finish; stem and bowl, both outside and inside, are equally well and carefully ground; the walls are, approximately, one-eighth of an inch in thickness throughout. The specimen is $2\frac{1}{4}$ inches long, the bowl being $1\frac{1}{4}$ inches in outer diameter and the stem five-eighths of an inch. It appears probable that we have here the form of the medicine pipe referred to by so many of the early writers, or is it but a freak of the native tobacco pipe? Coreal says they do not resort to bleeding when they are sick, as is done elsewhere, but call in their jaouans, who are priests and doctors. These suck that part of the body which is most painful, at times with the mouth, also with the chalumeau, after making a slight incision near a vein.[1]

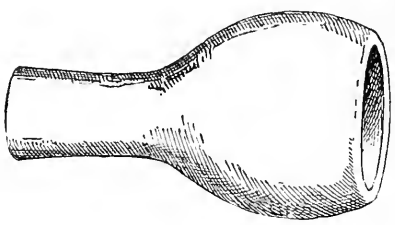

Fig. 23.
TUBE AND CUP SHAPED IMPLEMENT.
Bartow County, Georgia.
U.S.National Museum. Collected by Roland Steiner.

Coreal, relating his experiences between 1666 and 1697, is one of the earliest writers who employed the word *chalumeau*, a reed, in referring to the pipe. It is said to be a word of Norman origin and the one from which "calumet" is derived. A similar specimen to that in the Steiner collection is in the U. S. National Museum, and was found by Capt. C. E. Bendire on the John Day River, California.

Fig. 24 is a comparatively modern California pottery pipe $3\frac{1}{2}$ inches long, with a diameter of five-eighths of an inch at the mouth of the bowl. Except that both bowl and stem are longer, there are retained in this specimen all of the characteristics of the Pueblo pipe of a very primitive period, for there can be little doubt that the California pipe and that of the Indians south of California are nearly related, the former probably adopting the custom from their southern contemporaries, as the general distribution appears to have gradually traveled northward. This pipe has elegance of form, and the clay from which it is made is of very smooth texture, the walls of the bowl not being more than one-sixteenth of an inch thick. A Mojave pottery pipe of this character is in the Davenport Academy. The writer is informed by Dr. Franz Boas that there is a pipe of this type made of green serpentine in the American Museum of Natural History, New York, obtained from the Fraser River Indians.

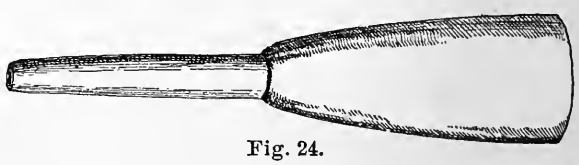

Fig. 24.
RED POTTERY TUBE AND BOWL PIPE.
Colorado River.
U.S. National Museum. Collected by Edward Palmer.

[1] Voyages de François Coreal aux Indes Occidentales, Amsterdam, 1722, I, p. 39, translated from Spanish.

Lewis and Clarke in 1804 describe a pipe which was possibly of this type, found among the Shoshonees, which was "made of a dense transparent green stone, very highly polished, about 2½ inches long and of an oval figure, the bowl being in the same situation with the stem. A small piece of burnt clay is placed in the bottom of the bowl to separate the tobacco from the end of the stem, and is of an irregular round figure, not fitting the tube perfectly close, in order that the smoke may pass with facility."[1]

The Indians of northern California, according to Prof. Otis T. Mason, formerly smoked a wild tobacco, *Nicotiana quadrivalvis* (Pursh) *N. plumbaginifolia*, which they smoked alone or mixed with the dry manzanita leaves, *Arctostaphylos glauca*, said to have a pungent, peppery taste which is not disagreeable. The pipes of the Hupa are, as Professor Mason says, conoidal in shape, and are of wood alone, stone alone, or latterly of stone and wood combined.[2]

While it is impossible to speak with certainty of the antiquity of the tobacco pipe in California, it may be said that the large collection in the U. S. National Museum from that State appears to be contemporaneous with the early arrivals of Europeans, probably Spanish, if we may form an estimate from those things found in the graves in association with them, such as glass beads, bird-bone whistles and flutes. The tubular pipes, it has been attempted to demonstrate, are found scattered over a large part of the continent, and they were quite commonly smoked by means of stems fastened into an enlargement in the smaller end, though there are evidences that at times these tubes were smoked without stems. Their shapes vary greatly, from tubes made of reeds, having, of course, parallel walls, to conical specimens more or less elongated; we may say from a foot or more to 3 inches or less in length. Schumacher found in the collection of the U. S. National Museum a tubular conical pipe from Oregon (Cat. No. 20339, U.S.N.M.), which is in an unfinished condition, having been drilled several inches from one end with a five-eighths inch hole, while from the opposite end a hole slightly less in diameter has been made. A tube of the hourglass form (Cat. No. 170477, U.S.N.M.) from South Carolina has been bored, so far as one can see, in exactly the same manner. The perforated articles of primitive peoples will almost always be found drilled from opposite sides, due to there being less friction in this method and consequent greater ease in drilling than when the work is all done from one end.

Fig. 25 is simply a cone cut apparently from manzanita wood. It is 13 inches long with a greatest diameter of 2 inches, tapering gradually to 1¼ inches at the smaller end. If this pipe were sawed in two one-

[1] Lewis and Clarke's Expedition to the Rocky Mountains, I, p. 366, Philadelphia, 1814.

[2] The Ray Collection from Hupa Reservation, Smithsonian Report, 1886, Pt. 1, p. 219.

third of the way from the smaller end it could not be distinguished in form from the elongated conical stone pipes usually found in graves and burial places of the islands along the California coast. This pipe appears to have been perforated by burning. The walls vary from one-sixteenth of an inch in thickness at the smaller end to nearly one-half

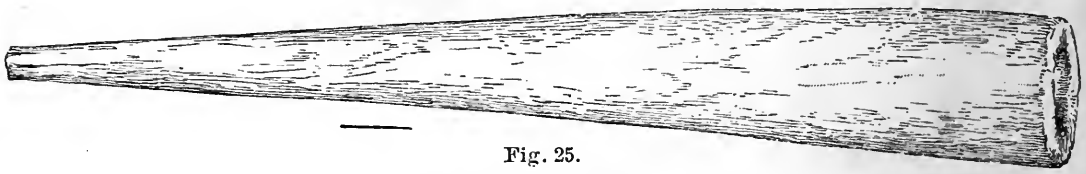

Fig. 25.

TUBULAR WOOD PIPE.

Hupa Reservation.

U. S. National Museum. Collected by Lieut. P. H. Ray.

an inch at the larger. The outer sides appear to have been smoothed by means of sandpaper, though the same appearance could be imparted to the specimen with any gritty sandstone or with sand alone. These pipes are made from any available wood, those which best resist fire being preferred, one of the best and most usual being the laurel.

Fig. 26 is an all-wood pipe of Hupa manufacture, $13\frac{1}{4}$ inches long,

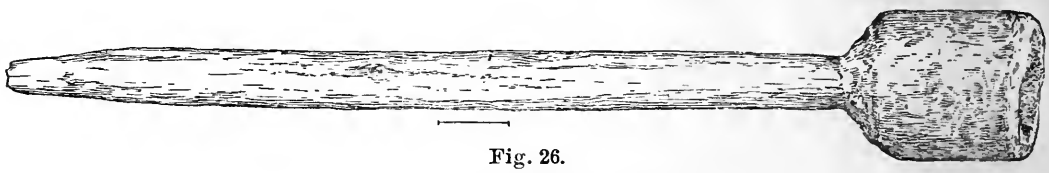

Fig. 26.

WOOD PIPE.

Hupa Reservation.

U. S. National Museum. Collected by Lieut. P. H. Ray.

that is of peculiar form. The bowl is $2\frac{1}{2}$ inches in greatest diameter, that of the stem being scarcely three-fourths of an inch thick. The bowl cavity consists of quite a shallow cup, the specimen having been rudely chopped out by means of an extremely dull tool, which gives one the impression that it would be a difficult pipe to smoke unless the smoker laid flat on his back.

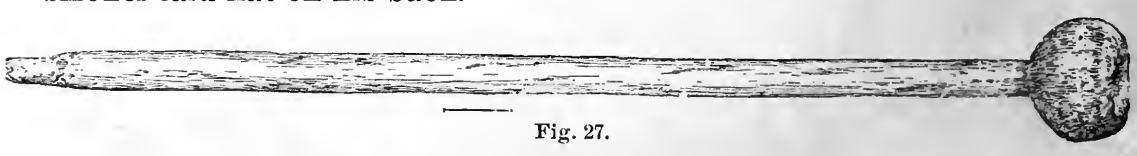

Fig. 27.

ALL-WOOD PIPE.

Hupa Reservation.

U. S. National Museum. Collected by Lieut. P. H. Ray.

Fig. 27 belongs to the same type of all-wood Hupa pipes, and is more carefully finished than the last specimen, its surface being brought almost to a polish. It is 15 inches long, though the bowl is less than 1 inch in depth, with a diameter of $1\frac{3}{4}$ inches. Had the preceding specimen been ground to a uniform surface, as these pipes

usually are, they would have had bowls alike, though among the Hupa, to a greater degree than has been detected among other natives, pipes have been made of a greater variety in shape than has been observed to be the case with almost any other type with which we are acquainted. They appear to be comparatively modern, and it is strongly to be suspected that the multiform shape of the Hupa pipe has been largely influenced by the outside demand for specimens as curiosities. There is in no implement found in America a greater observance of conventionalism of form than is the case among the pipes, and in those localities where the greatest variety exists investigation demonstrates that the smoking habit itself has been adopted within the last century. These varieties are most marked along the Pacific coast among the Hupa and Babeens.

Fig. 28.

SANDSTONE TUBULAR PIPE.

Hupa Reservation.

U. S. National Museum. Collected by Lieut. P. H. Ray.

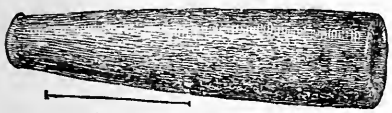

Fig. 29.

STEATITE TUBULAR PIPE.

Hupa Reservation.

U. S. National Museum. Collected by Lieut. P. H. Ray.

Fig. 28 is a fine-grained tubular sandstone, showing unusual mechanical skill in its manufacture, being 7 inches long, with a diameter at the larger end of three-fourths of an inch; the walls of the tube do not exceed one-sixteenth of an inch at the mouth of the bowl, increasing gradually to one-eighth inch at the smaller end. The outer surface is ground to a dull polish, and the interior shows striae running the length of the implement, made apparently by means of a file or similar tool.

Fig. 29 differs in no material respect from the simplest form of conical tubes found throughout the continent, except in the slightly raised rim around the smaller end. It is made of steatite, and has a length of $2\frac{5}{8}$ inches. This rim is similar to one on the bowl of the unfinished pipe from Cook County, Tennessee (fig. 19), and would indicate that it was intended simply for ornament and not for the attachment of a string.

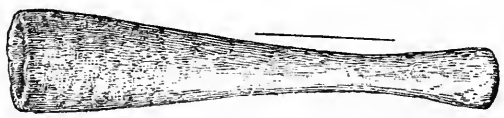

Fig. 30.

TUBULAR WOOD PIPE.

Hupa Reservation.

U. S. National Museum. Collected by Lieut. P. H. Ray.

Fig. 30 is of wood, being the pipe used by the Hupas at the present time, and is 3 inches long, with a greatest diameter of three-fourths of an inch, the bowl being about seven-eighths of an inch deep, from which there runs a narrow stem hole to the smaller end.

Fig. 31 shows the shape of the tobacco bag of these people, and is made from strips of the roots of the spruce, split into strings and woven together; six buckskin loops are attached to its rim in such a manner

that their apices meet in the center of the opening. A long string is attached to one loop and is serially passed through all the others, by means of which the bag may be opened and closed at will by drawing the loops apart or by drawing the string. This bag would be found to differ little, except in material, throughout the continent. Some would make it of skin, while others would weave it from suitable fibers, and others again would probably fashion it from birch bark.

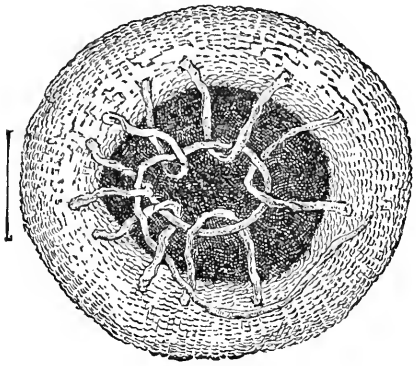

Fig. 31.
ROOT-PLAITED TOBACCO BAG.
Hupa Reservation.
U. S. National Museum. Collected by Lieut. P. H. Ray.

Fig. 32 is a wooden pipe, 11 inches long, the bowl of which is made in the hourglass form, similar in outline to certain tubes found in the Middle Atlantic States. The bowl has been cut with a dull tool, but upon the stem are a number of crossed lines, intended to add to its ornamental appearance. Fig. 33 is made of hard wood, the bowl of which is carved in a series of octagons, chamfers, and holes, which give to this specimen quite an ornamental effect. The tube is $12\frac{1}{4}$ inches long, the bowl being seven-eighths of an inch in its greatest exterior diameter, and has a cavity 2 inches deep. Figs. 34

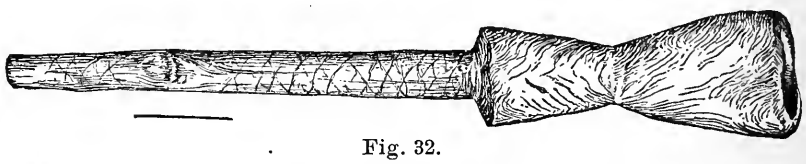

Fig. 32.
WOOD AND STONE PIPE.
Hupa Reservation.
U. S. National Museum. Collected by Lieut. P. H. Ray.

to 37, inclusive, show the most modern form of the Hupa pipe, which is made from different kinds of wood and serpentine. These pipes are most carefully polished, and are evidently made with modern tools. The remarkable feature of these pipes is shown in the serpentine bowl.

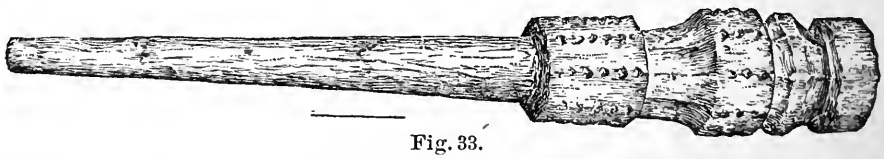

Fig. 33.
WOOD AND STONE PIPE.
Hupa Reservation.
U. S. National Museum. Collected by Lieut. P. H. Ray.

Fig. 35 is set in a tapering wood socket, held in place by some kind of glue, the whole surface being subsequently ground and polished. Fig. 37 shows the pipe in its original skin case, with its strap for suspension. The American Indian pipes have always been most carefully

guarded by their owners, in cases or coverings of skin, basketry work, bark, or woven rags.[1]

The Northwestern California pipe has been referred to by Mr. Henry R. Schoolcraft, quoting Col. Roderick McKee, as "a straight stick, the bowl being a continuation of the stem enlarged into a knob and held perpendicularly when smoking."[2]

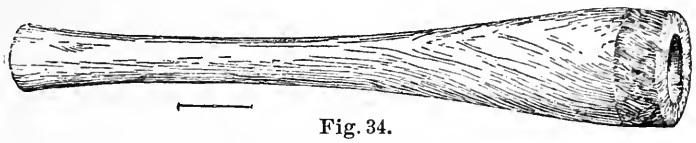

Fig. 34.
WOOD AND STONE PIPE.
Hupa Reservation.
U. S. National Museum. Collected by Lieut. P. H. Ray.

There is in the U. S. National Museum collection a small serpentine tube, collected by Rev. Stephen Bowers at Santa Cruz Island, California, 3 inches long, with a greatest diameter of five-eighths of an inch; around the middle and on each end of which are three or four parallel incised lines, and on one end of which there yet remains

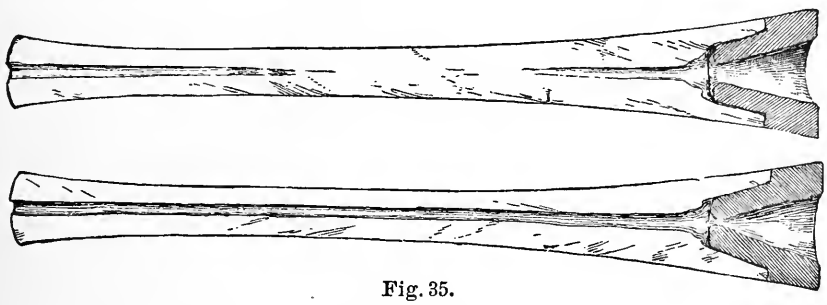

Fig. 35.
WOOD AND STONE PIPE.
Hupa Reservation.
U. S. National Museum. Collected by Lieut. P. H. Ray.

attached, by means of asphaltum, part of a circular row of flat shell beads. A similar specimen from Santa Barbara is in the Douglass collection. While these latter tubes have perforations too small to allow of their being smoked as pipes, they are interesting as showing a peculiar beadwork on stone, which would likely be found also as an ornamentation of the tubular pipe, such having in fact been recorded in several instances.

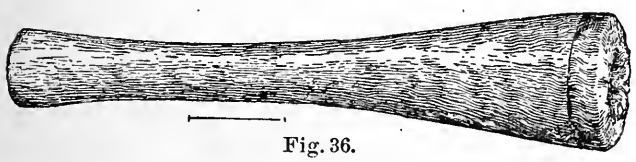

Fig. 36.
WOOD AND STONE PIPE.
Hupa Reservation.
U. S. National Museum. Collected by Lieut. P. H. Ray.

Fig. 38 shows a concretion found near Morgantown, West Virginia, which was supposed to have been of artificial

[1] Otis T. Mason, The Ray Collection from Hupa Reservation, Smithsonian Report, 1886, plates XV, XVI, pp. 219, 220.

[2] North American Indian Tribes, Pt. 3, pp. 107, 141, Philadelphia, 1847.

manufacture. A close inspection developed the fact, however, that the cavity was a natural formation, which had contained a cephalopod, a species of cystoceras. The circular cavity shows a succession of wavy parallel striae, which have every appearance of being made with a drill, which, however it would be impossible to give with any primitive implement, and it may well be doubted whether it could be done

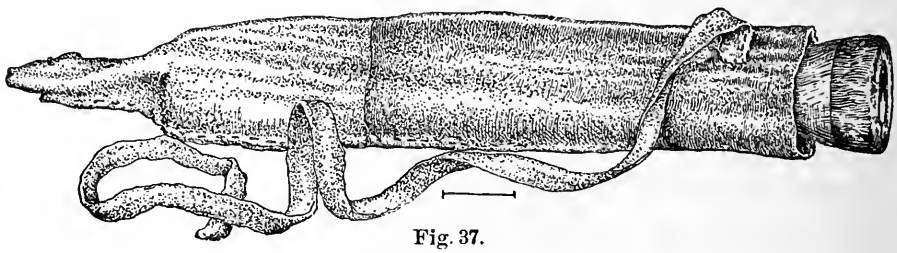

Fig. 37.

WOOD AND STONE PIPE.

Hupa Reservation.

U. S. National Museum. Collected by Lieut. P. H. Ray.

with the most improved modern tools. While the bowl has the conoidal shape common to tubular pipes, one side is flat, while the other is rounded. It has a length of $2\frac{1}{4}$ inches with a width of $1\frac{5}{8}$ inches, and is much harder than stone from which pipes are usually made. Around the flat side of this tube, where it apparently is attached to a base, a slight groove has been evidently artificially made to enhance the appearance; a most excellent illustration of the Indian's attraction to unusual shapes in natural objects.

The native American, however, does not appear to be alone in smoking straight tubular pipes, for Flinders, in the early part of the century, is quoted as referring to a tribe of Papuans puffing smoke through tubes.[1]

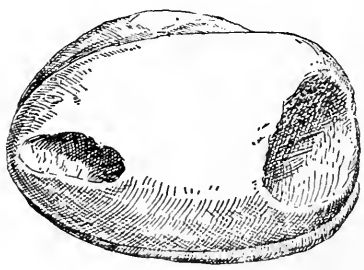

Fig. 38.

CONCRETION STONE.

Morgantown, West Virginia.

Collected by Dr. Walter Hough.

The natives of Sankum River, Africa, in about 5° south latitude, are said to use bone pipes, made from the metatarsal bones of deer,[2] similar to those referred to in this paper of Kiowa and Comanche origin.

It has been commonly supposed that to make a stone pipe required weeks if not months of patient labor. The writer has, however, demonstrated that with primitive tools, picking, grinding, and drilling, almost any pipe, such as those which have been used by American Indians, could be completed in less than three days' work and the more ordinary ones in a few hours. Instances of the discovery of conical tubes in different States and Territories could be multiplied were it necessary, but it is believed a sufficient number of illustrations have been given to impart a fair idea of the type. There appears no room to doubt

[1] J. W. Dawson, Fossil Men, p. 196, Montreal, 1880.

[2] Robert T. Pritchett, Ye Smokiana, 1890.

that the tubular and conoidal pipe is comparatively common throughout the continent and that it is the most primitive of all forms, as it is the one found over the largest area of the continent, it being also the type upon which there are the least evidences of file marks. Among all tubular pipes which have come under the writer's observation the mark of the file appears only once, and in that instance it is upon a small surface of a glossy specimen which may well be modern.

The surfaces of tubular pipes, with scarcely an exception, have every appearance of being made with stone tools, excepting, of course, the Hupa pipe. The drill marks in tubular pipes have also every indication of being made with primitive tools, and it is the only type found in the country upon which steel tool marks do not appear with such frequency as to indicate the contemporaneity of the white man; not of necessity that he made them, but that they were made with tools supplied by him. The shape itself of many of the American Indian tubes is such, and their ornamentation is of a character to lead to the conclusion that they are due to European influences. The aboriginal mechanic made at one bound a wonderful stride when he first became possessed of a blade of iron, even though it were but the hoop of a barrel; and how much greater was his advance when he became possessed of implements of steel! Every forward step in the art of sculpture or of carving throughout the known world has been chiefly due to the discovery of improved tools, which have limited possibilities. With the stone-pecking tool carving was possible, but slow, while sculpture in free action was an impossibility, because of the jar of the working tool. An attempt at the representation of free action is first found to be successful when the bronze blade supplanted the stone hammer, and statues were made from the softest stones, instead of from the granites and diorites which had preceded them. The steel blade and the rasp made the sculpture of marble in the round with free action first possible. Is it probable that the American Indian, alone of all the races of the earth, formed so startling an exception as to have carved perfectly in the round and to have had no period of rude art? The Indian was quick to appreciate and to employ tools which so materially lightened the labors of life as did those made of iron.

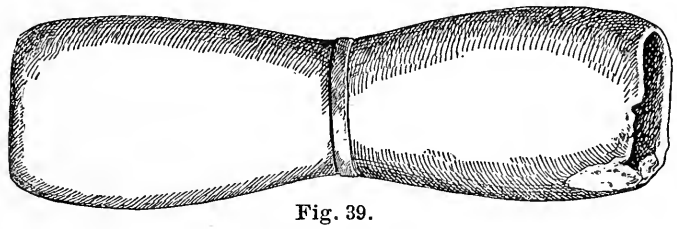

Fig. 39.

STONE HOURGLASS TUBE.

Nashville, Tennessee.

Cat. No. 5355, U.S.N.M. Collected by J. Varden.

Fig. 39 is a tube of the hourglass pattern, collected by Mr. J. Varden, from Nashville, Tennessee. With few exceptions, these tubes are made from steatite, and are more smoothly ground than is usually the case with conoidal pipes, and show a higher appreciation of art. They vary in length from 5 to 14 inches, with an exterior diameter of

from 1½ to 2 inches, the interior of the tube being one-third of an inch, or even less, across.

The tube figured is 6 inches long with a greatest diameter of 2 inches, gradually diminishing to 1½ inches. The contractions of these tubes often have bands encircling them, made at times in imitation of a rope or cord. Sometimes there are two or even three bands of different widths, intended apparently as ornamentation. The perforations are comparatively straight in these hourglass tubes, though there is a cast of a specimen in the U. S. National Museum which, upon the exterior, shows a decided curve. The curve once given to a tubular pipe, whether accidentally or by design, would be quickly recognized as an improvement upon the straight tube, thereby enabling one to smoke it with less discomfort than would necessarily result from the use of a straight pipe. It is difficult to believe that the white man, who has traded in stone implements from the time of John Smith's first voyage to the present day, did not also trade in pipes, especially as they, of all his possessions, appear to have been the objects for which the Indian had the greatest veneration and to which he attached the greatest value, and consequently for which he would pay the most liberal prices. The numbers of trade pipes found in Indian burial places strongly attest the extent to which the trade between the whites and the Indians eventually extended. There is scarcely an account of a treaty between whites and Indians in which the pipe and tobacco tongs do not appear among the presents exchanged, and there are records of "great pipes" being presented, by both French and English governors, to their red allies as symbols of amity and pledges of good will. As noted in reference to other tubes, those of the hourglass form appear to have been originally drilled by means of solid points, the perforation being subsequently enlarged by gouging out each end, and leaving a narrow hole or channel connecting the two bowls or ends. These tubes have been supposed to have served among other purposes as astronomical instruments, a suggestion hardly deserving serious consideration. This type, the writer thinks, were employed as pipes, a belief in which many now concur. It appears that tubular pipes were not invariably smoked by placing the smaller end in the mouth, for Dr. Fewkes found the Moki Indians lighting conical pipes and placing the larger end to the mouth, blowing smoke through the smaller end until the lighted material was consumed. When it is remembered how persistently customs are handed down among the Indians, and particularly pipe customs, or quasi-religious invocations, which are conducted by societies of men whose function is to act in conformity with traditional rituals, we can well believe that similar implements, even in remote antiquity, were put to like uses. The resemblance of pipe customs from the most widely separate parts of the continent appear to attest the antiquity of the practices.

The interiors of the hourglass type of tubes and of many of the

conoidal pipes are so alike in their narrow neck or point of contraction about their centers as to suggest the likelihood of the plant smoked causing the fire to fall into the smoker's mouth, especially when it is considered that the tube almost of necessity had to be held perpendicularly in smoking.

Fig. 40, said to come from a mound near Ashland, Kentucky, belongs to the typical tubular hourglass type. It is now in the collection of Mr. A. E. Douglass, of New York City. It is 9 inches long, the bowl outside being $1\frac{3}{4}$ inches wide. It must be admitted that this pipe, from an artistic point of view, evidences a step in advance in ornamentation beyond anything heretofore observed in connection with American stone tubes of any kind. Upon this tube we see a wood duck facing the stem, which is well modeled and shows distinctly the bird's crest and two depressions for the eyes, which there can be little doubt were intended for the insertion of artificial eyeballs. The wings of the bird are crossed over the back, and its tail is so modeled as to represent a frog facing the bowl, the bird's legs answering for those of the frog. This singular composite figure, it must be admitted, is a most remarkable occurrence if it belongs to pure savage art, which the writer believes to be an impossibility. From the base of the tube to the top of the duck's head the measurement is 4 inches, the band being three-fourths of an inch in width. The bowl of this tube, which is behind the duck, has an opening $1\frac{1}{4}$ inches across and a depth of $1\frac{3}{4}$ inches, at which point it contracts to a tube one-half an inch in diameter, which for a distance of 4 inches is of uniform size; then it begins to expand gradually until it reaches a diameter of 1 inch at the opposite end. Another tube of this type is referred to by Squier and Davis as being found in a mound near the Catawba River, Chester district, South Carolina, upon which a well-carved owl is attached by the back, showing a bold and spirited piece of sculpture practically in the round.[1]

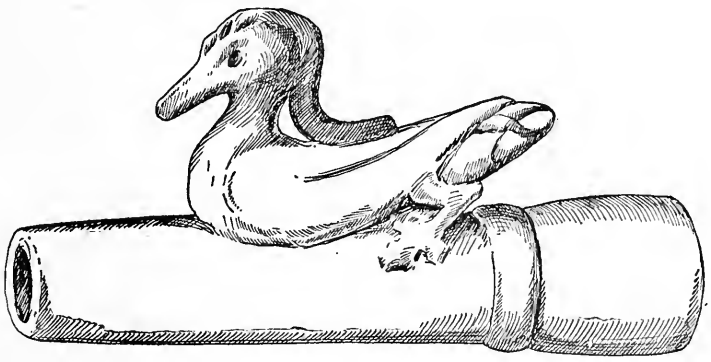

Fig. 40.
HOURGLASS TUBULAR PIPE.
Ashland (Kentucky) Mound.
American Museum of Natural History, New York. A. E. Douglass collection.

Thruston also figures a tube with a wood duck upon it, sitting quite at one end, and without an encircling band.[2]

The wood duck and owl are found constantly represented upon rectangular pipes in the territory of the tubes of hourglass form.

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[1] Ancient Monuments of the Mississippi Valley, p. 226, fig. 123.
[2] Antiquities of Tennessee, p. 193, fig. 93.

Fig. 41 presents yet another peculiar divergence from the usual tubular pipe. This specimen is 9 inches long, the greatest diameter being $2\frac{3}{4}$ inches, and is from Williams Island, Tennessee, and was collected by Mr. J. B. Nicklin. The interior of the tube contracts and expands as does that of fig. 40. The bowl and stem are both enlarged by the usual longitudinal gouging. The opening at the smaller end of this tube is similar in character to that noticed in the stems of the California pipes, and appears to have been intended for the insertion of a stem of wood. Upon this tube lies stretched out the head and neck of a dog or wolf, fairly well modeled. On the sides of the bowl are rudely scratched into the serpentine, of which it is made, two totemic figures, one to the right and the other to the left of the animal's nose, so rudely executed that it is impossible to say for what they are intended, though one appears to represent the skin of some bird or animal. Between the ears of the animal are observable a series of parallel scratches, apparently made with a file, though the rest of the implement presents no surface which could not be duplicated with stone tools. The design of this pipe is more artistic than most of the hand work of savages, though the totems lightly scratched into the surface appear to be the work of another school from that which carved the remainder, the one and the other differing radically in technique. The writer has detected upon the surface of a number of the stone pipes in the collections of the U. S. National Museum totemic characters etched into the stone with some sharp-pointed tool, and they are invariably extremely rude efforts to represent some animal or object; so rude are these etchings that they arouse a grave doubt in the writer's mind as to whether they could have been made by a people who were capable of delineating animal form with the skill shown in the sculpture of many of the American pipes. Even though it be admitted that there were skilled artisans who made the pipes, and that the slight surface etchings were individual totems or marks, the suspicion remains that the sharp parallel, equidistant, straight lines so common on all sculptured or carved pipes are evidences of the use of the file of the white man.

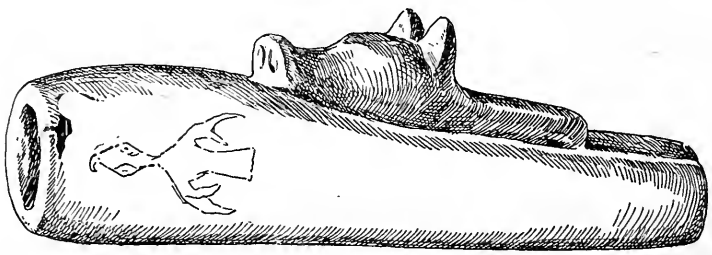

Fig. 41.
TUBULAR STONE PIPE.
Williams Island, Tennessee.
Cat. No. 1017, U.S.N.M. Collected by J. B. Nicklin.

If aboriginal trade in stone implements made by the whites was of such value as to justify John Smith in asking permission of Powhatan to go through his country to obtain material from which to make axes, how much more valuable would be the trade in ornamented pipes; and can one doubt that the whites indulged in it extensively, unless it be

argued that the natives possessed superior capacity in manufacturing them? The characteristics of the etched totemic figures are not in accord with the pipe carvings. The one shows gross ignorance of outline, the other the skill of an artist. Bartram refers to "the skin of a wild-cat or young tiger laid at the king's feet with the great or royal pipe, beautifully adorned. The skin," he says, "is usually of the animals of the king's family or tribe, as the wild-cat, otter, or bear, rattlesnake, etc."[1]

The last pipe referred to is related to a well-defined type of rectangular pipes, which, except that they are found too far to the south, would well answer to a description of the pipes to which John Smith referred as being "three-quarters of a yard long, prettily carved with a bird, a bear, a deer, or some such device at the great end," and "sufficient to beat out the brains of a man."[2] Strachey refers to them as being sufficient to beat out the "braynes of a horse."[3] Bagnall, Powell, and Todkill increase the length of this pipe to 3 feet.[4]

EARLY REFERENCES TO THE USE OF TOBACCO.

Prescott says, "Tobacco was among the products of Peru, yet the Peruvians differed from every other nation to whom it was known, by using it only for medicinal purposes in the form of snuff."[5]

The Inca Garcillasco de la Vega does not appear to refer to smoking, but only to the using of snuff.[6]

"Tabaco," according to Oviedo, "was a certain instrument of wood or cane made in the manner of the Greek γ, of which the Indians accommodate the two upper canes to the openings of the nose for the inhaling of the smoke of a plant which they call Cohiba or Cojiba," which is also called to-day by the name of that instrument.[7]

He, like others, says their "fumigation" was for the purpose of getting intoxicated.

Dr. A. Ernst concludes, after a most careful consideration of the text, that Oviedo never saw an Indian using the little implement he describes, and shows that "taboca" is the correct name for an implement which is still used by several tribes in South America. It is made of one of the long bones of the tapir, through which the Muras and Mauhés of the Amazon reciprocally blow into each other's nostrils the parica. Another explanation agrees with Las Casas; that

[1] William Bartram, Travels through North and South Carolina, Georgia, East and West Florida, Dublin, 1793.

[2] Captain John Smith in Virginia, p. 54, in Arber's edition of Smith's Works.

[3] William Strachey, Historie of Travaille into Virginia, 1612, p. 40 (Hakluyt Society).

[4] W. Simmonds, The Discoveries and Accidents with the First Supply in Virginia, 1612–1624, in Arber's edition of Smith's Works.

[5] History of Conquest of Peru, I, p. 140, Philadelphia, 1860.

[6] The Royal Commentaries of Peru, p. 120, London, 1618.

[7] Oviedo, Historie General e Natural de las Indias, I, plate 1, fig. 7, Madrid, 1855, from Salamanca edtion of 1535–1547.

"cahoba" was the name, not only of the powder, but also of the ceremony of taking the powder.[1]

According to Fairholt, this figure of the pipe does not occur in the earlier editions of Oviedo, the cut being copied from the Salamanca edition of 1547.[2]

Purchas, about 1626, quaintly describes this tube referred to by Oviedo; alluding to the natives of Hispaniola, who, he says, "had tobacco in religious estimation, not only for a sanity, but for sanctity also, as Oviedo writeth, the smoke whereof they took into the nose with a forked pipe fitted to both nostrils, holding the single end in the smoke of that herb burning in the fire until they became senseless. Their priests most used this, who, coming to themselves after this sleepy fume, delivered the oracles of their zemes or devils, which sometimes spake by them."[3]

Dr. Max Uhle, of the Museum of Science and Art of the University of Pennsylvania, has written a most interesting paper on snuffing tubes,[4] and to him my thanks are due for the illustration shown in fig. 2.

Lafitau, speaking of this habit, says that "after they tumble down, deprived of all feeling, they are carried away in their hammocks by their wives."[5]

Southey refers to certain tribes of the Rio Negro "who have an extraordinary and tremendous ceremony, for which a large house is set apart in all their villages. It begins by a general flogging of one another with a thong and stone at the end. This continues eight days, during which the old women, who among the American savages officiate at most works of abomination, roast the fruit of the parica tree and reduce it to a fine powder. The parties who had been paired in the previous discipline are partners also in the following part, each in turn blowing this powder with great force through a hollow cane into the nostrils of his friend. They then commence drinking and the effect of the drink and the deleterious powder is such that most of them lose their senses for a time and many lose their lives. The ceremony lasts sixteen days, and is called the feast of the parica."[6]

Condamine, according to McCulloh, says the Omaguas, on the upper waters of the Amazon, snuff up a powder, which they call there "carrupa," by means of a forked hollow stick, the forked end being inserted in the nostrils. He says that the intoxication which follows this practice lasts twenty-four hours.[7]

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[1] A. Ernst, of Caracas, Venezuela, Etymology of the word tobacco, American Anthropologist, II, p. 134.

[2] F. W. Fairholt, Tobacco and Its Associations, p. 14, London, 1859.

[3] Purchas, His Pilgrimage, V, p. 957, London, 1626.

[4] Bulletin No. 4, University of Pennsylvania, I.

[5] Père Lafitau, Moeurs des Sauvages Amériquains, comparées aux Moeurs des premiers Temps, II, p. 138, Paris, 1724, quoting Oviedo.

[6] Robert Southey, History of Brazil, Pt. 3, p. 723, London, 1819.

[7] J. H. McCulloh, Researches, p. 93, Baltimore, 1829, quoting Pinkerton's Voyages, IV, p. 226.

Humboldt refers to the same habit among the Otomacs, whom, he says, "gather the long pods of a mimosacea, cut them in pieces, moisten them, and cause them to ferment, mixed with the flour of cassava and lime, procured from the shell of a helix. The whole mass is exposed to a brisk fire. When it is to be used, it is reduced to a very fine powder and placed in a dish; he holds the dish in his right hand and inhales the *niopo* by the nose, through a forked bone of a bird, the two extremities of which are applied to the nostrils. This bone, without which the Otomac believes he could not take this kind of snuff, is 7 inches long. It appeared to me to be the leg bone of a large sort of a plover. Father Gumilla says 'this diabolical powder of the Otomacs, furnished by an arborescent tobacco plant (*Orinoco illus.*), intoxicates them by the nostrils; deprives them of reason, and renders them furious in battle.'"[1]

Nadaillac says, "Another Spanish historian tells us that the natives of Hispaniola, to the great astonishment of the Spanish, placed a tube with two openings in their nose, in order to lose none of the aroma of the precious plant."[2] He further informs us, quoting Clavigero, who lived in Mexico in 1775, "that the Aztecs gave to tobacco the name 'pycietl,' which they were not satisfied to smoke in the shape of cigarettes wrapped in corn leaves, but also inserted it in fine powder in their noses. The powder thus employed served to clear the head, and its virtue was so highly appreciated in Spain that it was called the 'sacred herb.'"[3]

Herrera says of the Venezuelans, "They also use much tobacco for rheumatism, humors, and pains in the head. They take it through the nose mashed into powder; they drink the juice, and it makes a purge; and it is also used by the Spaniards."[4]

These references make it conclusive that the Y-like implement referred to by Oviedo is identical with the bifurcated bird bone referred to by Baron Humboldt, or the bone of a tapir as suggested by Dr. Ernst, the only one known to the writer is in the Museum of the University of Pennsylvania, made from the leg bone of a llama. The evidence, however, appears plain that Oviedo made no mistake in attributing to the tube the properties of a pipe, a view fully sustained by Monardes.

The habit of using snuff appears to have been one of the peculiarities of the people of South America, who, so far as available writings indicate, did not smoke the pipe; and it is extremely doubtful if they smoked at all until the practice was introduced about the time of the Conquest of Mexico by the Spanish; nor does the smoking habit

[1] Alexander Humboldt and Aimé Bonpland, Personal Narrative, 1799 to 1804, V, Pt. 2, p. 662.

[2] Nadaillac, Les Pipes et le Tabac; Matériaux pour l' Histoire Primitive et Naturelle de l' homme, November, 1885, p. 498, quoting Istoria antica del Mexico Césene, 1780 to 1781, VII.

[3] Idem, p. 498.

[4] Herrera, Historia General, p. 139, Madrid, 1726.

appear to have prevailed in the northwestern part of North America from any very early period, but seems to have been introduced from Japan by way of Siberia, if we may judge from the form of the pipes. How and where the smoking habit originated must remain largely a matter of conjecture. The effect on the system of tobacco smoking is sedative as well as stimulating, and the belief in its supposed medicinal properties is yet by no means obsolete either among the Indians or the whites. As McCulloh tersely remarks, "smoking among the rude Indians of North America became the pledge of their hospitality, like the salt of the Arab."[1] The use of tobacco and other plants, smoked in tubes or pipes, on the northern continent is most intimately associated with the life history of the Indian, not only as a sovereign remedy for most human ailments, but as a necessary function in all ceremonies, whether of the individual, of the clan, the tribe, or the confederacy. The hunter smoked to bring him game, the traveler to bring him a successful end to his journey, those on the water offered tobacco to the water to quiet the waves, or, if on land, to propitiate the winds which were the living evidences of good or evil creatures, and the smoking of the pipe throughout the whole of what is now the territory of the United States became something more than a flag of truce, for it was an evidence of friendship and its smoke the symbol of the spirit world. The practice of chewing tobacco was first noticed on the coast of South America by the Spaniards in 1502,[2] but does not appear to have been indulged in to any general extent elsewhere among the natives.

There appears to be no positive evidence of the extent to which the early Spanish settlers cultivated the tobacco plant, but that their first plantations were largely devoted to its growth there is no doubt.

Cigarettes and cigars among the Spanish-American peoples are employed almost to the exclusion of the pipe, and it may well be that such was the custom of those countries occupied by them from a time antedating the Spanish invasion.

As late as 1731 John Cockburn says that throughout New Spain there was "no such thing as a tobacco pipe, but poor awkward tools used by negroes and Indians."[3]

Wherever we find the tobacco plant mentioned in early chronicles it is invariably spoken of as possessed of remarkable medicinal properties, and this view of it was indorsed as late as the first half of the seventeenth century by the medical fraternity of the whole of Europe.

The Inca Garcillasso de la Vega (1688) says: "The herb or plant which the Spaniards call tobacco and the Indians sayri is of admirable use in many diseases amongst them; particularly being taken at the

[1] J. H. McCulloh, Researches, p. 92, Baltimore, 1829.

[2] Encyclopædia Britannica.

[3] A Journey Overland from the Gulf of Honduras to the South Sea, performed by John Cockburn and five other English Gentlemen, p. 139, London, 1735.

nostrils in snuff serves to purge the head, and the other virtues of it are well known and esteemed in Spain, so that they give it the name of *Yerba Sancta*,"[1] or Herbe Sainte, according to Labat.[2]

Herrera refers to tobacco in Peru as a medicinal herb called piccietl, "which stops pains brought on by colds, and taken in the form of a smoke is a cure for rheumatism, asthma, and colds, and the Indians and negroes carry it in their mouths, which makes them sleep, and so that they will not feel fatigued."[3]

Ulloa says that in the early part of the last century Lima's commerce consisted largely of snuff. "The merchants dealing in it sell only perfumes, such as amber, musk," etc.[4]

Dr. von Ihering doubts that the Chileans knew of tobacco and smoked the same out of pipes before the arrival of the Spanish; though we are told that in each temple there are two figures in relief, or two statues with black beaks, before which they continually burn the wood of certain trees of the country which have a very sweet odor.[5]

It is undoubted that, although the smell of burning tobacco is objectionable to many people, there are others who find it most agreeable, the matter being to a great extent one of education.

Thomas Man, an Englishman, in 1602, called the plant tobacco, though Dr. Monardes, a Spanish writer, employed the term as early as 1571. The French, as early as their first voyage to Montreal (about 1650), called tobacco petun, a term by which they referred to it for a long period. The word is sometimes spelled petum. Petun was, according to Fairholt, the word used by De Bry and "Herbe La Reine" was employed by Jean Neander, of Leyden, as also by Herba Legati.[6] Romano Pane, a Spanish priest, sent back by Columbus during his second voyage to Hispaniola, in De Insularum Ritibus (1497), speaks of a medicinal and religious plant, an herba inebrians, cohoba, cohobba, or giva. By whatever terms tobacco has been called, the words "tobacco" and "petun" are the two from which all other languages appear to have selected the name for this plant.

Knevet, about 1593, speaks of the natives of the West Indies as "mighty takers of tobacco," and think it not only the best thing their country produces, but one of the greatest necessaries of life; for besides its use in smoking and chewing they practice all their chirurgery with it and apply that alone in case of any hurt whatever.[7]

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[1] Garcillasso de la Vega, The Royal Commentaries of Peru, p. 47, London, 1688.

[2] Labat, Nouveau Voyage aux Isles de l'Amérique, IV, p. 478, Hague, 1724.

[3] Historia General, p. 212, Madrid.

[4] Antonio de Ulloa, Voyage Historique de l'Amérique Méridionale, Book I, Chap. X, p. 490; and Don George Juan, A Voyage to South America, London, 1772, Book II, Chap. X, p. 109.

[5] Histoire de la Decouverte et de la Conquête de Pérou, p. 15, Paris, 1830.

[6] William Bragge, Bibliotheca Nicotiana. See also De Herba Panacea, Birmingham, 1880; Neander, Tobacologia, Hoogenhayan, 1644, pp. 18, 103, 122, 137.

[7] John Harris, Knevet's descriptions of the natives of the West Indies, Voyages and Travels, I, p. 706, London, 1705.

All available evidence tends to contradict the supposition that the peoples of the West Indies or of South and Central America possessed pipes, and the excavations among the graves and ruins of these peoples, which have been quite extensive, have not disclosed a single specimen so far as the writer has been able to discover. In the U. S. National Museum there are wonderfully rich collections of pottery and stone implements from Porto Rico, the Bahama Islands, Nicaragua, Costa Rica, and Chiriqui, yet none of them contain a single article which resembles a pipe of any form.

Conventional forms appear to govern the shapes of pipes in contiguous territory through the whole northern continent, the tubular shape, as before observed, being the only exception to the rule. The geographical distribution of the best-known types of pipes is so pronounced that a specimen of any one of them may be assigned to its proper area with little risk of mistake.

The curing of tobacco appears seldom to have been referred to by early writers, though Benzoni, according to H. Ling Roth, says: "When the leaves are in season they pick them, tie them up in bundles and suspend them near the fireplace until they are very dry, and when they wish to use them they take a leaf of their grain (maize) and putting one of the others into it they roll them round tight together; then they set fire to one end and putting the other into the mouth they draw their breath up through it and they retain it as long as they can, * * * and so much do they fill themselves with this cruel smoke that they lose their reason; and some there are who take so much of it that they fall down as if they were dead and remain the greater part of the day or night stupefied."[1] The curing here described is not dissimilar to the present approved method among tobacco cultivators.

The Mexicans, in sending ambassadors, according to all of the Spanish writers of the sixteenth century, exhibit a custom strikingly like those of the northern Indians in similar ceremonies. De Solis says: "In the right hand they bore a large arrow with the feathers up on high, and on the left arm a target made of shell. The intent of the embassy was known by the feathers of the arrow, for the red denoted war and the white denoted peace."[2]

Prescott says that "tobacco (in Mexican yetl), is derived from a Haytien word, 'tabaco.'"[3] There is too little known of how far the Mexicans used tobacco for the assertion to be made that it "did not possess the peculiar character attached to it by the North American Indians as an indispensable accessory to treaties, the cementing of friendships, etc., but was indulged in chiefly by the sick as a pastime and for its stimulating effect, and after dinner in the form of paper, reed, or maize-leaf

[1] H. Ling Roth, The Aborigines of Hispaniola, Journal of the Anthropological Institute of Great Britain and Ireland, XVI, p. 259.

[2] Thomas Townsend, History of the Conquest of Mexico, quoting Antonio de Solis (1610–1686), p. 133, London, 1724.

[3] Conquest of Mexico, I, p. 154, note.

cigarettes called pocyetl, smoking tobacco, or acayetl, tobacco reed, the leaf being well mixed in a paste, etc."[1]

The habit of smoking was not sufficiently well known to Europeans to be described by any uniform formula, tobacco itself being called by many names and the pipe having as many more. The practice was, however, apparently a common one, employed by the medicine man to draw out or drive in pain. It may be said that for a century after its introduction into Europe physicians prescribed it in a manner as foolishly as did the Indians, for it was considered a specific for every known disease. The effect produced on the individual by smoking was to stupefy or intoxicate to the point of insensibility, which was astonishing to the Spanish; yet the Indian of the northwest still employs the pipe and tobacco in much the same way as did the natives who were first encountered by the Spanish invaders.

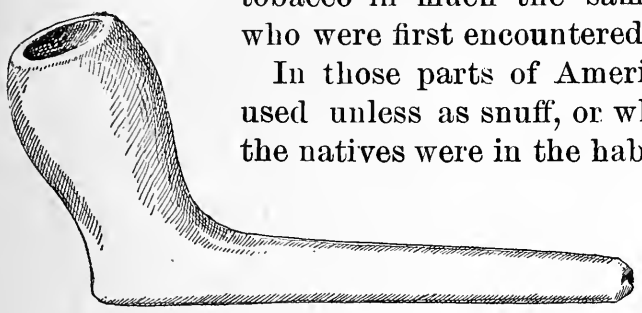

Fig. 42.
MEXICAN POTTERY PIPE.
Valley of Mexico.
Cat. No. 27889, U.S.N.M. Collected by Museo Nacional, Mexico.

In those parts of America where tobacco was not used unless as snuff, or where the pipe did not occur, the natives were in the habit of chewing maize or some other starchy substance and making of it an intoxicating drink; and in certain portions of South America they use cocoa or other means to produce intoxication or stupefaction. Diaz says: "The city of Cholula had an excellent manufacture of earthenware of three colors, red, black, and white, painted in different patterns, with which Mexico and all the neighboring countries were supplied, as Castile is by those of Talavera and Plascencia."[2] If pipes were made of pottery at that time specimens should be numerous, but the museum of the city of Mexico is said to contain not over half a dozen pipes having bowls to them; and it may be added regarding these that little can be said with certainty concerning their age or those who made them.

Fig. 42 belongs to a type which, though in some of its features resembles the modern pipe, is in others peculiar to Mexico. It is a glossy light-red pottery from the valley of Mexico, collected by the Museo Nacional, Mexico, and contains a tempering of fine sand. It is 6 inches long and 2½ inches high, being perfectly flat on the base, which is sufficiently broad to support it in an upright position upon any smooth surface, the bowl standing at an angle of about 15 degrees from the perpendicular. The interior diameter of the bowl at the top is three-fourths of an inch, which enlarges to seven-eighths of an inch at a point corresponding to the greatest exterior diameter; the base of the bowl

[1] Cyrus Thomas, Mound Explorations, Twelfth Annual Report of the Bureau of Ethnology, p. 687, quoting Bancroft's Native Races, II, p. 287.

[2] Diaz, True History of the Conquest of Mexico, p. 124, London, 1800.

contracts inside to half an inch, the stem-hole being of one-fourth inch uniform diameter. The gloss of these pipes is superior to any which the writer has seen on pottery of any character from primitive Mexican ruins or elsewhere. The surface, while smoothed as though with a burnishing tool, gives the writer the impression that prior to finishing the pipe its surface had been gone over with a scraping or cutting tool, as it is covered with innumerable narrow facets under the glaze, indicating rather a higher state of art than that evidenced in pre-Cortesian Mexican ruins.

There is in the Douglass collection one of these pipes, the bowl of which is white, the stem being pink, the colors gradually blending. It was found at Palenque, and is similar in shape to the pipe here figured, even to the glaze. A pipe of pottery in the same collection, which is said to have been found at Chatahoochee, Georgia, has a very similar form to the Mexican, though the base is not quite so flat.

Fig. 43 is another clay pipe from the valley of Mexico, collected by W. Batchelor, and of the same length and type as that shown in the preceding figure. It is of a raw-sienna color, having a bluish tinge; the walls of the bowl, fig. 42, are, however, thicker, and the stem, also flat on the bottom, broadens toward the end to a width of $1\frac{5}{8}$ inches. The surface of this pipe is also glazed, and upon its upper side a rude ornamentation has been incised, subsequent to the firing. The pipe looks as though it was intended to represent a duck's head and bill. The eyes consist each of a central dot, surrounded by two concentric circles, the outside one being $1\frac{1}{8}$ inches in diameter, while upon the stem, on each side, are two parallel lines following the contour of its outline to a point where they join, an incision beginning on each side of the stem hole, and running parallel to each other for an inch or more, when they curve inward and meet. The circles, measured by means of dividers, appear to be equidistant from the central dot of the eye, though in a similar specimen in the Douglass collection the rings appear slightly elliptical.

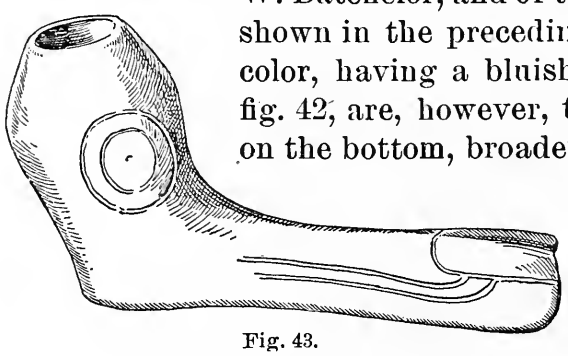

Fig. 43.
GLOSSY POTTERY PIPE.
Mexico.
Cat. No. 133, U.S.N.M. Collected by W. Batchelor.

Professor Holmes refers to a pipe preserved in the Mexican National Museum, the bowl of which is in the shape of the head[1] of a creature, whether quadruped or reptile it is impossible to say. The opening in the bowl corresponding to the jaws has both below and above a circle which appears to represent an eye, which, if they be intended for eyes, the head is doubtless that of a snake, a common figure upon American pipes. While the writer is inclined to see in the finish of these pipes

[1] Transactions of the Anthropological Society of Washington, D. C., 1883 to 1885, p. 80, fig. 13.

foreign influences, it must be admitted that his knowledge of Mexican pottery is not sufficient for him to be at all positive. The enlargement of the outside of the bowl is peculiar among American pipes to the Mexican ware, though almost identically the same shape, but of a smaller size, is common among the early English trade pipes.

A pipe apparently intended to represent the head and ears of some quadruped (fig. 44), made of hard burned pottery, was collected by Dr. J. W. Fewkes at the Pueblo of Santa Clara, New Mexico. In height and length it is 2½ inches by 2 inches. The outside of the bowl has a slightly raised rim, in which there are several notches cut through the surface, whether for ornament or as a tally it is impossible to say. This specimen in some of its features is similar to pipes found elsewhere, though the writer is inclined to attribute it to no distant period.

Pipes of the type of fig. 43 are referred to as being found at Palenque, one of which has been figured in the great work of Kingsborough.

There is in the Douglass collection a unique pendant of serpentine of a green color found in a mound on Indian River, Florida, very similar in its outline to the Mexican pipe-stems which are shaped like a duck's head. It has been suggested to the writer that the facets upon the Mexican pipes with glossy surfaces are indicia of the use of the burnishing tool rather than of scraping or cutting implements. While this view may be correct the question would be solved were it known whether the facets were made before or after the polishing.

Fig. 44.
HARD-BURNED POTTERY PIPE.
Santa Clara, New Mexico.
Cat. No. 176396, U.S.N.M. Collected by Dr. J. Walter Fewkes.

In discussing references to the use of tobacco among the natives of Mexico and the West Indies it will probably be best to include those countries which first fell under early Spanish influences, comprising the coast of California, and, in a measure, that of Florida, before investigating conditions to the northward.

Friar Marco de Niça, in his journey to Cibola the year preceding the expedition of Vasquez de Coronado (1539), does not refer to the natives being addicted to smoking or using the pipe, though they were familiar, probably, both with the cigarette and the tubular pipe. This, however, it must be remembered, was considered not only by the Spanish but later by certain of the French as an idolatrous practice.

Alarcon in 1540 speaks of the natives having "physicians who cure them with charms and blowings which they make."[1] This there is little doubt was a reference to the tubular fire cure elsewhere more minutely described.

[1]Hernando Alarcon, Hakluyt's Voyages, III, p. 514, London, 1810, from edition of 1600.

As late as 1766 the natives of California were said to be "entirely ignorant of the effects of strong drink, and even if they do become drunk during the feast it is only done with the smoke of wild tobacco," which the author calls "Cimmaron,"[1] which plant, under the name of "Cimeron" (*Nicotiana attenuata*), De Paw asserts was used not only by the Californians, but by all the Western Indians.[2]

Venegas observes that they "use no intoxicating liquors among them, and it is only on their festivals that they intoxicate themselves with the smoke of wild tobacco."[3]

The Californians are also said never to have thought of making use of potters' clay for making cups, pots, bowls, etc., by hardening in the sun or by fire until taught by the whites.[4]

In this respect they would appear to differ from the natives of the greater part of the continent, but that it is a fact appears to be demonstrated by the excavations of Yarrow and Schumacher made in 1874; though it should be remembered that the Californians possessed a good supply of steatite from which they made "ollas" (bowls) and dishes. The veins of steatite or soapstone appear to have been worked in many parts of the continent, where suitable material was available for making bowls and dishes from a very ancient period; and in those sections of the country abounding in soapstone pottery is less abundant, though its scarcity, especially in the Atlantic States, extends but few miles from the quarries.

The Californians are also said to have burned the abalone shell for the lime to mix with tobacco to make them drunk.[5]

The writer is informed by Maj. J. W. Powell that the Piemas, Maricopas, Mojave, and Southern Utes smoke the leaves of the manzanita (*Arctostaphylos glauca*) and the Jamestown weed (*Datura stramonium*), the latter for the purpose of inducing a form of intoxication; at times they also chewed it for the same purpose. The Assiniboines smoke the leaves of the bear berry (*Arctostaphylos uva-ursi*) mixed with tobacco. In Alaska "the economical Indian usually cuts up a little birch wood or the inner bark of the poplar and mixes it with his tobacco."[6]

Alvar Nunez Cabeca de Vaca, who was, as he informs us, treasurer and alguazil major of the expedition of Pamphilo Narvaez in 1527, whose expedition was to conquer and govern the provinces toward the river of palms, was, with Castillo, Dorantes, and a negro, Estavanicó, the only survivors who returned to civilization. These four men were for years prisoners among the natives, but finally escaped, and after

[1] Historie de la Californie, I, p. 90, 1766, translated from English.

[2] Cornelius De Paw, Recherches Philosophique sur les Americains, I, p. 205, Paris, 1771.

[3] A Natural and Civil History of California, I, p. 68, translated from Spanish, 1758.

[4] History of California, I, p. 78, London, 1759.

[5] Tylor, California Farmer, April 27, 1860; H. H. Bancroft, Native Races of Pacific States of North America.

[6] W. H. Dall, Alaska and its Resources, p. 81, Boston, 1870.

years of wandering through the wilderness rejoined the Spanish in New Mexico, where the relation of their really wonderful adventures caused great astonishment. Cabeca de Vaca, among the Indians "became a pedlar," and was sent by his savage masters from "place to place looking for what they wanted." "My principal articles of commerce were," he says, "sea shells, with which they cut a kind of fruit like a bean which they use as a medicine, and little sea shells which are used as money. I brought back in exchange skins, and a kind of red earth used in coloring the skin and hair; stones for arrow points, very hard reeds for making them, glue, and scarlet-colored hoops made of hair."[1] What he says of smoking is quite unsatisfactory, as his only reference appears to be that "in this country they stupefy themselves with a smoke which they buy at any price."[2]

Ferdinand de Soto, in 1539, entered Florida on the west coast, and, crossing the Alabama, Tombigbee, and Black Warrior rivers, reached the Mississippi north of the Arkansas,[3] though he does not appear to refer to the smoking habit. The inference drawn is negative, it is true, but had the natives smoked to the extent which they did a hundred years later all over the contiment it can hardly be supposed that there would not have been reference to it.

Discoveries are constantly being made in Indian burial places of articles of European manufacture lying beside objects of the pure stone age, consequently there is great uncertainty in establishing the date of a burial. Many of the Florida mounds evidence apparent great age, and on the other hand many appear to be quite modern and to have been erected since the end of the first half of the seventeenth century. Professor Putnam instances the case of a burial mound in a group of mounds in Orange County, Florida, where "a number of ornaments made of silver, copper, and brass were found, also glass beads and iron implements which were associated with pottery and stone implements of native make."[4]

The Floridians in 1564 were said by Sir John Hawkins to have used in traveling a dried herb, which, with a cane and an earthen cup in the end, they "with fire and the dry herbs put together do suck through the cane the smoke thereof, which smoke satisfieth their hunger and therewith they live four or five days without meat or drink, and these all the Frenchmen used for this purpose."[5]

This reference precedes by twenty years the voyage of Ralph Lane, who is said first to have carried tobacco to England, and is the earliest reference which the writer has found in which the bowl is spoken of as distinct from the pipestem. Jean Ribault, in 1565, says "the natives

[1] Voyages relations, memoirs originaux, etc., de l'Amerique, p. 122, Paris, 1837, from Valadolid edition of 1555.

[2] Idem, p. 197.

[3] B. F. French, Historical Collections of Louisiana, quoting Biedma.

[4] Fourteenth Annual Report of the Peabody Museum, p. 17.

[5] Hakluyt's Voyages, p. 541, folio edition.

consider nothing more valuable than birds' feathers of different colors."[1] Yet neither he nor Laudoniere in 1564, in his second voyage, nor De Gourgues in 1567–68 appear to have referred to the pipe and tobacco being used in Florida. These travels have all been described with considerable minuteness, and had smoking been at that date a general habit there would surely have been reference to it. Professor Jeffries Wyman found no pipes in the shell heaps of the St. Johns River, Florida, and thinks "that had they been used by the builders of these heaps it is hardly possible, in the many excavations that have been made and the large facilities offered by the undermining action of the river, that some evidence of them should not have been detected."[2]

Mr. Frank Cushing, in the recent Florida excavations, where he made a remarkably rich find of aboriginal remains in stone, shell, wood, and pottery, speaks of its being noticeable that there was an absence of pipes.[3] On the other hand, Mr. Clarence B. Moore, who has made extensive investigations of the shell heaps of Florida, records that "at a depth of 6 feet from the surface of Mulberry Mound was discovered a pipe of earthenware complete in every part." He regards this as positive evidence that the people who built the shell heaps were familiar with the smoking habit.[4] Mr. Moore considered this mound among the later of the shell heaps.

A summary of evidence, therefore, appears to indicate that prior to the date of Alvarez and De Soto the smoking habit, if indulged in, was employed as a religious rite and not as a pastime, but subsequent to the Spanish settlements along the coast smoking became general. De Vaca refers to the shell heaps of the Gulf of Mexico, and says that the natives "subsist for three months on these shellfish and drink very bad water."[5]

Among the vast deposits of shells on the Chesapeake Bay shores in Maryland and Virginia, where thousands and tens of thousands of acres in the aggregate are covered with shell village sites, the pipe is almost the rarest object found. The shells of these heaps vary in depth up to 5 feet, yet the writer only knows of two primitive pipes ever being found, while the English trade pipe is not uncommon. These shell heaps would be occupied during the warmer months when conditions were such as to conceal a pipe dropped in the grass or underbrush, and one would suppose that they would be found as other objects are. The burial customs, however, of these Indians are little understood, and it is yet possible that an investigation of their graves when found may clear up our understanding of the subject. The writer inclines, there-

[1] Historical Collections of Louisiana, Pt. 3, p. 207, Memoir Historique des derniers Voyages aux Indes, Lieus Appelé La Florida (Nouvelle France).

[2] Jeffries Wyman, Fresh Water Shell Mounds of St. Johns River, Florida, p. 59, Salem, 1875.

[3] Letter from Tampa in Washington Post, February, 1896.

[4] Shell Heaps of the St. Johns River, Florida, American Naturalist, July, 1894, p. 623.

[5] Charles Rau, Prehistoric Fishing, p. 216, referring to De Vaca.

fore, to the belief that while smoking was probably indulged in, it was but to a limited extent until the whites, by the cultivation of tobacco, popularized its use.

That the natives of the shores of the great bays of the Atlantic coast were reasonably fair boatmen one would expect, but Bartram's assertion is almost incredible that they "have large handsome canoes, some of them commodious enough to hold twenty or thirty warriors. In these large canoes they descend the river on trading and hunting expeditions to the seacoast, neighboring islands, and keys, quite to the point of Florida, and sometimes across the Gulf, extending their navigations to the Bahama Islands and even to Cuba. A crew of these adventurers had just arrived, having returned from Cuba a few days before our arrival, with a cargo of liquors, coffee, sugar, and tobacco."[1]

The natives were great hunters and thoroughly acquainted with the natural food supply, in search of which they wandered great distances as it became seasonable in different places. As we are informed by Cabeça de Vaca, they have been known to travel hundreds of miles in a direct line from home for the purpose of hunting or of attacking some enemy. In their wanderings in search of food, upon their hunting expeditions, and upon the no less important search for suitable material for the manufacture of their implements they became thoroughly familiar with the minerals of the country, and with the artificial fracture of those minerals, which was often of greater importance to them than was the mineral itself, for to the Indian stone was valuable or the reverse according to the ease with which it could be chipped, pecked, cut, or ground. Pickett says: "Upon the creeks and rivers in Alabama, where they meander through the mountainous regions, are occasionally seen cuttings upon rocks, which have also been improperly attributed to European discoverers. In the country of Tallapoosa, not far below the mouth of the Sougohatchee and a few miles east of the Tallapoosa River, are cliffs of a singular kind of a gray rock, rather soft and having the appearance of containing silver ore. The face of these cliffs is very much disfigured by having round pieces taken out of them. The ancient Indians used to resort to this place to obtain materials for manufacturing pipes of large and small sizes and other household vessels. They cut out the pieces with flint rocks fixed in wooden handles. After working around as deep as they desired the piece was prized out of the rock. The author is also sustained in this position by unquestionable Indian testimony which has been procured by him."[2] He refers without doubt to a steatite or soapstone outcrop, a stone which has always been a favorite mineral from which to make pipes and bowls for cooking. In addition to its ability to resist heat, it was the most easily cut of all the minerals. What is said of Alabama would

[1] William Bartram, Travels through North and South Carolina, p. 225, Dublin, 1793.

[2] Albert James Pickett, A History of Alabama, and incidentally of Georgia and Mississippi, from the earliest period, I, p. 177, Charleston, 1851.

apply equally to every State certainly as far north as Connecticut. The steatite has been everywhere worked by natives to furnish culinary vessels, and we see that in this, as in all other stones, the native thoroughly appreciated the varying texture of minerals and selected only those best suited to his requirements. The advent of the white man caused an immediate revolution in aboriginal art. Wherever his wares were distributed, skins were traded for blankets, and, as Schoolcraft well says, "Europeans gave them iron and brass for the rude clay pots; steel for wooden traps; gunpowder, the rifle, and guns for bows and arrows; fire steels and flints for the painful process of percussion; the White Chapel for the bone needle; the steel awl for the *aishkun* or tip of the deer's horn, and, in fine, a style of arts so superior to all the aboriginal modes of meeting the common wants of life that the latter fell into disuse as soon as the European fabrics could be obtained."[1]

Think of the immeasurable superiority of a tool of iron or steel over the best and sharpest of those of stone. The one implement cut wood or soapstone where the other may be said only to have bruised it. The metal point, as a perforater or drill, and the rasp must have been very attractive tools to people who had theretofore known only the stone or wood drill-point used with sand, or the grinding stone. If we examine any collection of ancient American pipes the extreme care with which they have been finished is noticeable, though it is seldom that a polish of any kind is met with in any implements of aboriginal art north of Mexico. Compare, however, a general collection of stone implements and the difference of surface wear is noticeable, and we see that not only have rubbing stones varied according to the work required of them, but a strong suspicion is aroused that the sands and smoothing material were more highly appreciated than would be suspected by a casual observer. If one will use sand to smooth a stone surface he will quickly appreciate that sands vary enormously in their cutting properties. Pliny shows that this was appreciated in his day, for he discusses the relative merits of "the sand of Ethiopia" and "of India," while for polishing marble he discusses the properties of "Indian sand calcined," "the sand of Naxos," and that of Coptos, generally known as "Egyptian sand;" "and more recently," he says, "a stone has been discovered in a creek of the Adriatic Sea that is equally efficacious for this purpose. Thebaic stone is considered well adapted, as also porous stone, or pumice powdered fine."[2]

Fig. 45 is one of the earliest representations of the American pipe, showing a separate stem, drawn after an illustration of De Bry, in Brevis Narratio.[3] The woman is represented as furnishing the man

[1] North American Indian Tribes, Pt. 4, p. 142.

[2] The Natural History of Pliny, p. 326, translated by John Bostock and H. S. Riley, London, 1866, Bohn edition.

[3] Brevis Narratio, Book II, plate XX, Frankfort, 1591, published by Jacob Le Moyne.

with leaves from a bowl or basket of the period of Laudoniere's visit to that part of the territory then called Florida, which covered an indefinite geographical area. The author of Recherches Philosophiques des Americains refers to the custom of the Northern American Indians making the women and slaves that are to be sacrificed on the death of a chief take drugs. They use, he says, the leaves of tobacco broken and made into paste, of which they form large balls, that those who are to die are required to swallow. They make them drink a glass of water, which in dissolving throws them into a complete delerium.[1]

Bartram, setting out from Mobile in 1777 and arriving at Talusa, speaks of the houses of the people being "decorated with various paintings and sculptures, which I suppose to be hieroglyphic, and as an historical and legendary of political and sacerdotal affairs; but they are extremely picturesque, or caricature; as men in a variety of attitudes, some ludicrous enough, others having some kind of animal, as those of a duck, turkey, bear, fox, wolf, etc., and again, those kind of creatures as having the human head. These designs are not ill executed, the outlines bold, free, and well proportioned."[2]

Fig 45.
FLORIDIAN SMOKING.
After De Bry. Brevis Narratio.

It must be remembered that Bartram is speaking of a time two hundred and thirty years subsequent to the period when these Indians first had opportunity to become tolerably familiar with iron tools, though there yet remained even at that date much of primitive culture. The savage, made familiar with sharp cutting tools, quickly takes to carving as soon as some one suggests the idea of design. With these natives iron was quite a common possession at the period of Bartram's visit, and the churches of the French and Spanish had both familiarized the natives with the principles of carving. The French and Spanish of the period were well skilled carvers and carpenters, whom the Indians would not be slow to imitate. Though it is not intended to question the fact that rude carving may have been executed by some of the Atlantic coast Indians at an early period, it is suggested that there is little evidence that any of them carved in a manner to justify more being said of their work than that it was "not ill executed," the known antiquities of the Mexicans being superior examples of their date.

Verazzano, in his voyage along the coast of America in 1524, from the thirty-fourth degree of latitude to Newfoundland, probably refers to the use of the tobacco pipe in some form in his allusion to the natives who "live long and are seldom sick; and if they chance to fall sick at

[1] Recherches Philosophiques sur les Americains, II, p. 224, Paris, 1771.
[2] William Bartram, Travels through North and South Carolina, p. 454, Dublin, 1793.

any time they heal themselves with fire, without any physician. They say that they die for very age."[1] He nowhere speaks of tobacco or the pipe, unless it be in the above sentence, though stopping in many places.

Powell's map of the areas occupied by the different linguistic stocks of Indians at the time of the first advent of the whites shows that members of a given stock were often separated from each other by natives speaking dissimilar languages. The Sioux are found in North and South Carolina, the Algonquin along the Atlantic coast, while a tribe of the Iroquoian stock were located in Tennessee, each cut off by long distances from the main body speaking the language of their particular stock; and many other instances are noted on the same map. To carry history back only a few decades would doubtless materially change the geographical distribution of the tribes, due largely to the success or failure of their interminable internecine wars in which they were commonly engaged.

From the earliest period of white occupancy of Maryland and Virginia, tobacco constituted the great bulk of the exports of those colonies. The wonderful spread of its consumption during the first half of the seventeenth century created an enormous demand for the product, and the consequent inflation of its price was an inducement to the colonists to devote their greatest energies to its cultivation, to the exclusion of necessary vegetables and cereals, whereby on more than one occasion the population suffered from a scarcity of food. This plant consists of several species of *Nicotiana* (of the natural order of *Solanaceæ*), but those of which the leaves are used as a narcotic are few in comparison to the whole number.

The pipe of the Indians of New Sweden, otherwise Pennsylvania, described by Holm, appears to have had a stem equal in length to any on the continent. He says they "make tobacco pipes out of reeds about a man's length; the bowl is made of horn and to contain a great quantity of tobacco; they generally present these pipes to their good friends when they come to visit them at their houses and wish them to stay some time longer; then the friend can not go away without having a smoke out of the pipe. They make them of red, yellow, and blue clay, of which there is great quantity in the country; also of white, gray, green, brown, and black and blue stone, which are so soft that they can be cut with a knife; of these they make their pipes, a yard and a half long or longer."[2]

He further speaks of the natives having in their hands a tobacco pipe a fathom long. Holm's grandfather was a minister of the gospel, who accompanied Governor Printz as his chaplain in 1642; his father

[1] John de Verazzano, Hakluyt's Voyages, III, p. 362, London, 1810, reprint of 1600.

[2] Thomas Campanius Holm, A short Description of the Province of New Sweden, now called by the English Pennsylvania, in America, compiled from relations, etc., of persons of credit, p. 130, translated from Swedish by S. Du Ponceau, Philadelphia, 1834.

was in America about the same time. The length of this pipe and stem appears great in comparison with pipes with which we are familiar, though George Catlin represents a Chippewa Indian standing erect, leaning on a pipestem. It should be remembered, however, that some of Holm's assertions have been questioned, and are to be taken with grains of allowance, notably that reference to "a large and horrible serpent which is called a rattlesnake. It has a head like that of a dog and can bite off a man's leg as clear as it had been hewn down with an ax."[1] Though such snake stories are of course the exaggerations of ignorant people, it is the wonderful and mysterious which has greatest attraction for the multitude, and consequently such material will stray into print when histories are written by persons not themselves acquainted intimately with the country of which they write. The snake was a totem of many Indian tribes, if not of most of them, and is often represented coiled around the pipe bowls in graceful curves or lying along the stems, usually facing the smoker. Certain of the Pueblo Indians, the writer is informed, never kill snakes, even the deadly rattlers, because of their sacred character. When one is found in too close proximity to a camp, it is caught between the forks of a stick and carried to some secluded spot, where it is released. A similar veneration is said by the elder Pliny to have prevailed. "In Syria also," he says, "and especially along the banks of the Euphrates, the serpents never attack the Syrians when they are asleep; on this account they never kill them."[2]

Kalm, who was in New Sweden in 1749 at a place called Raccoon, on the Delaware River below Philadelphia, says "the natives had tobacco pipes of clay, manufactured by themselves, at the time the Swedes arrived here. * * * They did not always smoke true tobacco, but made use of another plant instead of it, which was unknown to the old Swedes, one of whom assured me it was not the common mullein, which is generally called Indian tobacco."[3]

Roger Williams says of the Narragansetts: "They generally all take tobacco; and it is commonly the only plant which men labor in, the women managing all the rest; they say they take tobacco for two causes; first, against the rheume, which causeth toothache, which they are impatient of; secondly, to revive and refresh them, they drinking nothing but water."[4]

This tobacco he calls "Wuttammânog;" "that is a weak tobacco, which the men plant themselves very frequently; yet I never see any take so excessively as I have seen men in Europe; yet excess were more

[1]Thomas Campanius Holm, A short Description of the Province of New Sweden, p. 53.

[2]The Natural History of Pliny, II, p. 354, translated by John Bostock and H. S. Riley, London, 1866, Bohn edition.

[3]Peter Kalm, Travels into America, II, p. 117, London, 1771.

[4]Roger Williams, A Key into the Language of America, p. 43, London, 1643, in Narragansett Club publications, I, edited by J. Hammond Trumbull.

tolerable in them, because they want the refreshing of beer with which God hath vouchsafed Europe.[1] The men throughout the country have a tobacco bag, with a pipe in it, hanging at their back. Sometimes they make such great pipes, both of wood and stone, that are 2 foot long, with men or beasts carved so big or massive that a man may be hurt mortally by one of them; but these commonly come from the Mauquăuwogs (Mohawks), or the man-eaters, 300 or 400 miles from us. They have an excellent art to cast our pewter and brass into very neat and artificial pipes."[2] "Narragansett," says Wood, "was the storehouse of all such kinds of merchandise as is amongst the Indians of those parts. From hence other tribes have their great stone pipes, which will hold a quarter of an ounce of tobacco, which they make with steel drills and other instruments. Such is their ingenuity and dexterity that they can imitate the mold so accurately that were it not for matter and color it were hard to distinguish them. They make them of green and sometimes of black stone."[3]

In 1674 the Narragansetts are spoken of as having been a great people, whose sachem was about Cannonicut Island, and who "are now but few comparatively; all that people can not make above 1,000 men."[4] This tribe was probably one of those which suffered so severely during the first half of the seventeenth century from the ravages of an epidemic that is said to have carried off the inhabitants of whole villages. Williams gives the name of a pipe as "Wuttammagon—literally, a drink instrument," or "Hupuouck." In 1620 we are told that "Massassoyt," chief of the Wampanoags, was "a lusty man of middle age, of a grave, demure countenance and sparing of speech. He had a long knife hanging in a string at his bosom, and behind at his back a little pouch of tobacco. This was furniture he never was without. His men also had their bags of tobacco at their backs."[5]

Samuel G. Drake says of Massassoit that he "differed from the rest of his followers only in a great chain of white bone beads. About his neck hangs a little bag of tobacco, which he drank and gave us to drink."[6]

James Thatcher refers also in 1621 to Samoset having a wild-cat skin on one arm, coming with some of his companions to the town of Plymouth, and bringing with them some parched corn reduced to a fine powder called "nokehike," or "nocake," which they eat mixed with water, and "had a little tobacco in a bag, of which they drank frequently."[7]

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[1] Roger Williams, A Key into the Language of America, p. 73.

[2] Idem, p. 73.

[3] William Wood, New England's Prospect, Pt. 2, Chap. 3, 1639, quoted in Narragansett Club publications, I, p. 73, note.

[4] Massachusetts Historical Society, I, p. 148, referring to Gookin, 1674.

[5] John Harris, A Relation of the Plantation at Plymouth, Voyages and Travels, I, p. 853, London, 1705.

[6] Samuel G. Drake, History and Biography of the Indians, p. 86, Boston, 1851.

[7] James Thatcher, History of the Town of Plymouth, p. 34, Boston, 1835.

"The Literary Gazette, September 11, 1819, page 588, says the Turks use the phrase 'drinking tobacco.'

"In Webster's Dictionary one definition of 'to drink,' is 'to inhale, to smoke, as tobacco.'

"In Miseries of Enforced Marriage, V, page 6, by George Wilkins, 1607, appears the line 'Feed well, drink tobacco.'

"In the Roaring Girl, Middleton & Decker, 1611, one of the personages says of some tobacco, 'This will serve to drink in my chamber.'

"A reference in one of Donne's satires, I, page 87 (Donne flourished 1610–1620), is as follows:

> Till one which did excel
> Th' Indians in drinking his tobacco well.

"That actual swallowing of the smoke was the mode in England at the time mentioned is shown by several contemporary illustrations of customs where the pipe is in the mouth or hand and the smoke is issuing from the nostrils."[1]

The excesses to which Williams refers as existing in Europe in the use of tobacco must have prevailed to an inordinate degree in the plantations, for a statute was enacted in 1633 in that of Massachusetts which provided that there must be no idleness "under penalty," and especial reference was made to "common coasters, unpfftable fowlers, and tobacco takers."[2]

In the account of Frobisher's second voyage, about 1577, to the coast in the vicinity of Hudson Bay, there does not appear to be reference to pipes and tobacco, although the implements and clothes of the natives are referred to with some particularity.[3]

If at that period the natives of Hudson Bay had no tobacco, which, however, is at present uncertain, the first English traders would have lost no opportunity to popularize its use in their journeys to the far north, where they went in search of food-fishes, as they did into the interior in search of peltries. The earliest reference which the writer has found to smoking among the Hudson Bay people is that of Henry Ellis, who went in search of the Northwest passage in 1746–47, by which time the habit had become general. He says: "These people have a very extraordinary custom. It is that when the fathers and mothers can no longer support themselves with their own labor they require their children to strangle them; and according to them it is an act of obedience on the part of the children, who perform the act as follows: First they make a pit, which the old person enters; for some time they converse with their children, at times they smoke a pipe, take a drink, etc.

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[1] Garrick Mallery, American Anthropologist, II, p. 141.

[2] William B. Weedon, Economic and Social History of New England, 1620 to 1789, I, p. 83, Boston, 1891.

[3] Master Dionese Settle, Second Voyage of Martin Frobisher, Hakluyt's Voyages, III, London, 1810; reprint of 1600 edition.

They then say they are ready; then two of the children put a leather strap around the parent's neck, and standing opposite each other they pull with all their strength until the parent is dead. Those who have no children often beg their friends to do it for them, but often they do not accomplish their wish in this respect."[1]

Cartier, in his first voyage to the St. Lawrence in 1534, when he went as far as Saguenay, does not mention smoking, though he does the following year, when he reached Hochelega. With the exceptions noted the people of North America generally appear to have been familiar with the practice of smoking prior to the arrival of French, English, Dutch, or Swedes. How far their intercourse had extended with the Spanish there is a lack of testimony, though that there was an early knowledge of Spanish and English existence is possible, for the first travelers on the Mississippi heard from the natives of men who rode horses in the southwest, and of people who traded them guns along the eastern coast. The Indian wandered over immense distances, and Carver records, about 1768, that "the Winnebagos, from their inveterate hatred of the Spanish, informed me that they made many excursions to the southwest which took up several moons. An elderly chief told me that about forty-six winters ago (1722) he marched at the head of fifty warriors to the southwest for three moons and attacked the Spanish."[2]

The Gros Ventres of Minnesota "used to raise small quantities of tobacco, the leaf of which as obtained from them was considered of great value, and for which their fellow Indians paid large prices. Peace parties of the Knistenos and Ojibways often proceeded hundreds of miles chiefly for procuring their much-coveted tobacco leaf."[3]

The Senecas "used to smoke tobacco and the bark of the Wahoo" (euonomous), "called by them cannakanick. They often mixed it with tobacco; they also smoked the bark of a species of dogwood. We used to call it in Pennsylvania the arrowwood, from the shape of the sprouts."[4]

The word "kil' likinick" is extensively employed among the Western tribes to designate tobacco. It is from the Dakota tongue, meaning literally redwood, the substance generally employed by the Menomoni being the red osier (*Cornus stolonifera* Michaux.)

"Tobacco is frequently used by the Menomoni as an offering. It is placed upon grave boxes; sprinkled on stones or rocks of abnormal shapes, their form being attributed to the great deity."[5]

Among the Kickapoos, Kansas, and Osages sumac (*Rhus trilobata*)

[1] Henry Ellis, Voyage à la Baye de Hudson, p. 245, Leyden, 1750.

[2] Travels of Jonathan Carver, p. 22, Philadelphia, 1796.

[3] William W. Warren, Minnesota Historical Collections, V, p. 179.

[4] Baldwin, Western Reserve Historical Society, No. 50, p. 107.

[5] Walter J. Hoffman, Fourteenth Annual Report of the Bureau of American Ethnology, pp. 250, 252.

next to tobacco was considered "one of their most fashionable treats when mixed in about equal proportions."[1]

Hunter, who was thoroughly acquainted with the Indians, having been a prisoner among them for many years, shows, however, that the treatment of disease by fire was not always in conjunction with tobacco. "They sometimes," he says, "relieve inward pain by setting a piece of touchwood on fire and permitting it to produce a blister over the pained part, saying that such treatment draws the enemy from his lurking place and exposes him to direct attack."[2]

In 1823 the Omaha were said to "frequently eject the smoke through the nostrils and often inhale it into the lungs, from which it is gradually ejected again as they converse, or in expiration."[3]

Long says "the kinnicanick, or, as the Omahaw call it, ninnegahe, which they use for smoking in their pipes is composed partly of tobacco and partly of the leaves of the sumac (*Rhus glabra*), but many prefer to the latter ingredient the inner bark of the red willow (*Cornus cericea*), and when neither of the two latter can be obtained the bark of the arrowwood (*Viburnum*) is substituted for them. These two ingredients are well dried over a fire and comminuted together by friction between the hands."[4]

The writer is informed that the kinnikinik of the Indians of the southwestern portion of the United States, notably of the Cheyennes, Comanches, Arapahoes, Kiowas, and Sioux, consists of the inner bark of the sweet willow (*Salix nigra*), which being first dried and pulverized by rubbing between the hands is used with sumac (*Rhus trilobata*) leaves; at other times they use the sumac alone. The Rev. M. Eells refers to killikinick as the dried leaves of a small bush which grows a foot or two high, and of dried laurel (*Kalmia latifolia*); also the dried bark of ironwood (*Carpinus caroliniana*) is used when they are short of tobacco to mix with it, but it is seldom if ever used alone. Tobacco is obtained from the Americans.[5] In 1843, near Walla Walla, the Nez Percés called tobacco "smoke," and remarked "we are better than the white men, for they eat smoke; we do not eat smoke. Such is their attachment for this stupefying vegetable that to obtain it they will part with their last article of food or clothing, or even take down the poles which uphold their dwellings."[6] Marcy and McClellan

[1] John D. Hunter, Manners and Customs of Tribes West of the Mississippi, p. 390, Philadelphia, 1823.

[2] Idem, p. 398.

[3] Stephen H. Long, Expedition from Pittsburgh to the Rocky Mountains, I, p. 332, Philadelphia, 1823. See also Randolph B. Marcy and George B. McClellan, Exploration of the Red River of Louisiana in the year 1852, Washington, 1853.

[4] Idem, p. 331. See also Maximilian, Travels in the Interior of North America, p. 154, London, 1843.

[5] The Twana Indians, Bull. U. S. Geol. and Geog. Surv., 1877, III, p. 64.

[6] Samuel D. Parker, Journal of an Exploring Tour Beyond the Rocky Mountains, p. 291, Ithaca, New York, 1844.

say also that the Comanches were extravagantly fond of tobacco in 1852.[1]

The Rev. Père Morice says of the "Tsilkohtines des Rochers," the Dénés of the western Rocky Mountains in British Columbia, that their "pipe is of serpentine or other stone and is common to both sexes, for it must be remembered that among the savages the women are inveterate smokers."[2]

The Abanaqui of Maine, who are of Algonquin stock, still smoke the outer bark of the red osier (*Salix purpurea*), the bark of the pine tree, and both leaf and bark of the squaw bush (*Vaccinium stramenium*), and mix the musk of the muskrat with the tobacco to give it a flavor.

Du Pratz refers to "a bank in which there were veins of white earth. The clay was unctuous and fine, from which I have seen very pretty pottery made. In the same banks ocher is found, which the Natchez come to get to smear their pottery with. This pottery was very pretty. When so smeared with ocher it became red after being cooked."[3]

Some of the purest clay pipes found are from the Lower Mississippi. In the far North, Alexander Mackenzie, in 1789, made the Slave or Dog Rib Indians smoke, "though it was evident they did not know the use of tobacco."[4]

The natives of the lower part of the Mackenzie River saw the first whites in 1788. These were probably from the ships commanded by Captain Cook.[5]

Franklin calls attention to the fact that as late as 1827 the natives of Herschell Island, at the mouth of the Mackenzie, "used tobacco, and some of our visitors had smoked it, but thought the flavor very disagreeable."[6] He thought they had obtained it of the Russian traders.

The shape of the Eskimo pipe, as well as the diminutive size of its bowl, forcibly suggests that it is an importation into America from the continent of Asia, brought there likely by the Japanese whom the Russians appear to have brought to the continent.

Near Icy Cape, in latitude 70° 43″, longitude 159° 46′ west, in 1826, Beechy says he found tobacco the most merchantable article, though "one of the natives who came alongside in a caiak, having obtained

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[1] Randolph B. Marcy and George B. McClellan, Exploration of the Red River of Louisiana, p. 102, Washington, 1853.

[2] Chez Les Sauvages aux Pays de l'Ours noir de la Colombe Britannique, p. 37, Paris, 1897.

[3] Le Page Du Pratz, Histoire De La Louisianne, I, p. 124, Paris, 1758.

[4] Alexander Mackenzie, Voyage from Montreal Through the Continent of North America, p. 31.

[5] Idem, p. 320.

[6] John Franklin, Narrative of the Second Expedition to the Polar Sea, p. 118, Philadelphia, 1828.

some tobacco that was offered for a lance, was resolute in not delivering up either."[1]

In latitude 48° as early as 1578, at a point approximately where the Aht and Chinook Indians are now located, on the Pacific Coast, the natives gave to Sir Francis Drake a little basket made of rushes and filled with an herb which they called "*Tabah.*"[2]

At another point Drake refers to "tobah" being offered his people "for sacrifice upon their persuasion that we were gods."[3]

About latitude 38° to 40° on the Pacific Coast, as early as 1600, "divers pieces of earthenware pots, as finely made as those in Spain," are referred to by Francis Ulloa.[4]

The writer has endeavored to cite as far as possible all early references to smoking material and pipes from Spanish, French, English, Dutch, and Swedish sources, which relate to the Atlantic or Pacific coast as well as to the interior of the continent. While some writers are silent on the subject, those who do refer to the custom do so invariably in a manner to make it conclusive that the pipe and tobacco, or the plant smoked, was regarded as important in all serious functions as well as in many cases requiring medical treatment. To make the fire with which the pipe was lighted throughout the whole continent, the straight shaft revolved between the extended palms appears to have been commonly employed in the same manner as the natives of Australia are known to have used it from an early period. The Papagos of New Mexico as early as 1848 made fire by plowing, as the writer is informed by Gen. D. H. Rucker, who was well acquainted with these Indians. This process is performed by rubbing the point of one stick rapidly back and forth in the groove of another piece of wood.

Clavigero tells us the Mexicans made fire, as did the ancient shepherds of Europe, "by the friction of two pieces of wood."[5] As early as 1586 John Davis describes the making of fire in the extreme north of the continent by means of the strap drill,[6] though the knowledge of this drill had been obtained almost certainly from Europeans, the American Indian having before their acquaintance with the whites had no knowledge of the principle of such an implement.

The Virginia Indians in 1602 were said by Captain Gosnoll to make fire "with a flat piece of emery stone and sort of mineral which they can not tell us the name of, but they have a piece of dry touchwood ready which receives the spark they knock out between the other two."[7]

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[1] F W. Beechy, Narrative of a Voyage to the Pacific and Bering Strait, p. 308, London, 1831.

[2] A Voyage About the World, p. 119 (Hakluyt Society).

[3] Idem, p. 122.

[4] Hakluyt's Voyages, III, p. 476, London, 1810; reprint of 1600 edition.

[5] History of Mexico, II, p. 262, Philadelphia, 1817.

[6] John Harris, Second voyage of John Davis for the discovery of the Northwest passage, Voyages and Travels, I, p. 581, London, 1705.

[7] John Harris, Voyages to the Northern Part of Virginia by Captain Gosnoll, Voyages and Travels, I, p. 816, London, 1705.

The subject of primitive fire making has been exhaustively treated by Dr. Walter Hough, of Washington City.[1]

The size and shape of some pipes are more indicative of their owners' occupation than one at first glance would be inclined to suppose. Nomads or hunters, for example, without fixed dwelling places, would not employ the ponderous pipes often found along the shores of the Mississippi River and in the Southern States, weighing at times many pounds, and often carved in the form of some bird or animal. Unless carried by canoe they would constitute a serious problem in the movements of a family. There may also be a serious doubt whether the delicately made pottery pipes of the Southern States and the equally carefully shaped specimens from northern New York, showing at times a thin bird's bill 2 or 3 inches above the bowl, were not necessarily the property of people living in permanent habitations.

PIPE BOWLS WITHOUT STEMS.

There are many ways of accounting for the evolution of the tubular pipe into one of a rectangular shape. The smoking of the tube would undoubtedly be extremely awkward, and notwithstanding the pebble or pellet of pottery dropped into the bowl, the material smoked would escape into the smokers mouth while being held perpendicularly as though drinking, while an accidental or intentional curve would suggest a valuable improvement in shape.

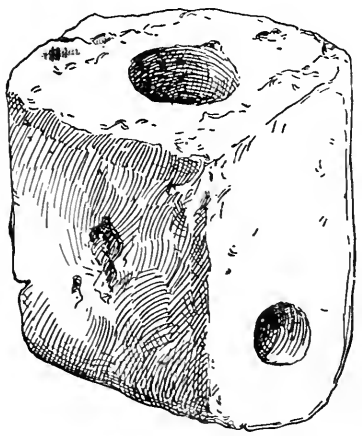

Fig. 46.
PIPE BOWL OF VOLCANIC TUFF.
Oregon.
Cat. No. 1282, U.S.N.M. Collected by T. Carver.

Mr. Clarence B. Moore found on the St. Johns River, Florida, a tubular pipe slightly curved and made of pottery with the elliptical cross section, which shape may well have been caused in drying the clay before burning. There is a tubular pipe of steatite in the collection of the University of Pennsylvania curved slightly in its longitudinal section, as is the California specimen herein illustrated.

Having considered the tubular pipe, which consisted of a stem and bowl in the same plane, we shall next discuss those pipes consisting of a bowl alone, its walls being perforated for the insertion of a separate stem. Whether this pipe should come next in order is open to question. In this type ordinarily the stem hole is approximately one-third the greatest diameter of the bowl, though there are as a matter of course rare exceptions to the rule where these diameters differ.

Fig. 46 is of this type, yet it would readily pass for one of recent production. It was found in Oregon, collected by Mr. T. Carver; it is drilled from a cube of volcanic tuff, which to a casual observer might well pass

[1] Smithsonian Report, 1888, p. 531.

for an ordinary piece of building brick. In length it is 1½ inches, in height 1⅞ inches, and 1⅛ inches wide. In this specimen, as is usual in pipes of this type, it is observed that both bowl and stem have been bored by means of a drill with a solid and not a tubular point, though it is often found that the bowl has been subsequently enlarged by scraping or gouging. These pipes were smoked with stems of wood, reed, or bone, governed by the supply of the locality.

Fig. 47.
STONE BOWL PIPE.
Berks County, Pennsylvania.
Cat. No. 6670, U.S.N.M. Collected by George M. Keim.

Of identical type is a pipe from Berks County, Pennsylvania, collected by Hon. George M. Keim, which is of a light brown talc. The block from which it (fig. 47) is made is rectangular at the base, about 2½ inches in height, becoming cylindrical at the top of the bowl. This pipe is evidently in an unfinished condition, and therefore doubly interesting, as showing much of the process of work upon it. The whole surface is covered with narrow facets, showing the mark of the blade with which it was cut; the uniformity in their width and their unusual length demonstrates conclusively that the tool was of metal.

Above the stem hole a ridge has been left almost entirely encircling the bowl, sufficiently pronounced to show that it was intended as an ornament. At one point on this specimen are noticeable a number of equidistant straight lines, which appear to have been made with a metal file, and which are common on so many American pipes.

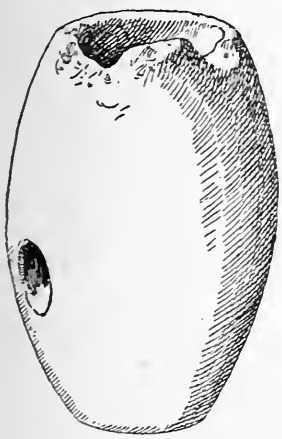

Fig. 48.
OVOID STONE BOWL.
Brownsville, Ohio.
Cat. No. 12494, U.S.N.M. Collected by W. Anderson.

A gray sandstone ovoid bowl (fig. 48) from Brownsville, Ohio, collected by Mr. W. Anderson, is slightly broken around the top; the rest of the exterior surface, however, is perfectly smooth and without ornamentation. This bowl has been ground into shape, the cavities being made by means of solid drill points. It is of symmetrical ovoid form, the base being flattened, and the thickness of the walls is scarcely one-eighth of an inch.

The bowl of fig. 49 is ground similar to that of the preceding specimen and is about the same height, 1¾ inches. It is made from an indurated clay of a grayish color. The stem hole has been bored by means of a large drill, and is half an inch in diameter at the surface, decreasing to three-eighths of an inch where the hole enters the bowl, which makes it evident that a stem could not be used with such a pipe unless it were bound to the bowl with a lashing of some kind, probably of hide. The wall of this bowl at its upper rim is ground until it is scarcely thicker than the cutting edge of a knife blade, the specimen being similar in

shape to many of the earthenware pots of the natives. Pipes of this type vary both in size and exterior form, probably as much as do those of any type found on the continent. Some appear to have been made from natural water-washed pebbles from the streams, and are without any evidence of artificial finish other than that of bowl and stem holes at right angles to each other; others are elaborate imitations of nearly the shape of Greek vases, having at times elaborate figures carved upon their surfaces. The stem holes are usually simple perforations made to intersect the wall of the bowl at its base, though at times upon the surface of the bowl the stem hole is in a slight shoulder projecting from the bowl as though for ornament, but it may well be intended to furnish a better socket for a stem, these being probably much more recent productions than those of simpler form.

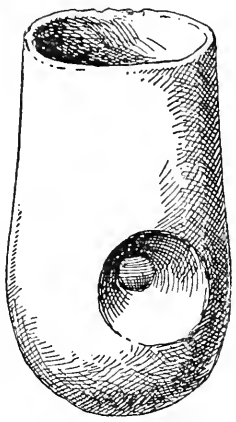

Fig. 49.
STONE URN-SHAPED BOWL.
Cumberland County, Tennessee.
Cat. No. 20129, U.S.N.M. Collected by Lorenzo A. Stratton.

Fig. 50, from Bloomfield, New York, collected by Col. E. Jewett, is made from serpentine, and is 2½ inches long; in outline it is similar to the elongated tubular pipes so widely distributed throughout the United States. In this instance, however, the stem is at right angles to the bowl, the exterior surface is smoothed almost to a polish, though the interior shows the process of enlargement by gouging, so commonly noticed in tubular pipes. At the base of this bowl there is a diagonally bored hole, which perforated the specimen, coming out at the end of the cone. This hole is intended evidently for the attachment of a string, as is the case with so many of the pipes found in countries where deep snows lie. The edges of the bowl and also of the base of this conoidal specimen are notched, the bowl with twenty, and the base with eight incisions. A knife blade, however, fits exactly from one notch across to another, both at top and bottom, which would indicate that they were intended rather as ornamentation than as scores, such as were at times kept upon the handles of tomahawks and pipe stems. There are upon the surface of this pipe some finely scratched lines, which, owing to erosion or weathering, are so nearly obliterated as to prevent tracing them with exactness, though they appear originally to have been pictographic. There is a pipe of this type in the Smithsonian collection upon which the only visible work of human hands consists of a small hole bored through the shell of a hollow concretion. It has, however, in all probability been employed as a pipe, as it is badly cracked from heat.

Fig. 50.
STONE BOWL WITH THONG HOLE.
Bloomfield, New York.
Cat. No. 6198, U.S.N.M. Collected by E. Jewett.

A similar concretion (Cat. No. 136978, U.S.N.M.) was found in a mound in Mason County, West Virginia, by Mr. R. W. Mercer, which is 4 inches high with a width of $2\frac{1}{8}$ inches, yellow in color, the stem being a hole one-eighth of an inch in diameter, broken through the shell midway of the natural bowl cavity.

As demonstrating that this type of pipe was used quite recently, reference may be made to a specimen which was found in Haldeman's shell heap, near Bainbridge, Lancaster County, Pennsylvania, in Conroy Township, on the Susquehanna River, close to two trade pipes of English make.

Rev. W. M. Beauchamp refers to a bowl pipe from Madison County, New York, having two stem holes, and Prof. G. H. Perkins illustrates another from near Swanton, Vermont.[1]

Schoolcraft illustrates one of these bowl pipes, which is said to come from an ancient aboriginal grave in Michigan at Sault Ste. Marie, upon which a lizard has been carved in relief, with legs spread out to assist in climbing the bowl, above which the head extends on the far side from the stem, facing the smoker, the tail being continued under the bowl. The whole is skillfully executed.[2]

A pipe in every way answering the description of the one referred to by Schoolcraft, and probably identical with it, is in the collection of Mr. A. E. Douglass, of New York.

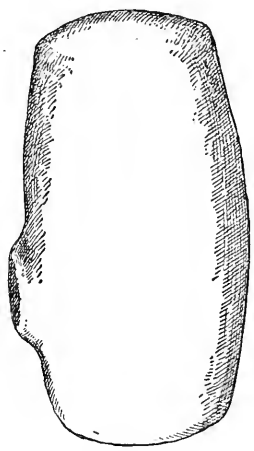

Fig. 51.

UNFINISHED PIPE.

Franklin County, Indiana.

Cat. No. 11934, U.S.N.M. Collected by R. Haymond.

A large specimen of what appears to be intended for a pipe of this type (fig. 51) is composed of quite a hard, imperfectly crystallized quartzite. It was found in Franklin County, Indiana, and was collected by Dr. R. Haymond. It is $4\frac{1}{4}$ inches long, with a greatest diameter of $2\frac{1}{2}$ inches. There is upon the lower part of this barrel-shaped object an incipient stem. The exterior surface is completed and ground evenly, though not finely, except at the top and bottom of the bowl, which yet remains rough, as left by the hammer marks. On top of the bowl there is a slight depression begun by pecking, as though intended for the reception of the drill point. Though unfinished, this specimen is of more than passing interest, showing as it does the process of manufacture of objects of hard stone.

Fig. 52 is a light green serpentine bowl from Accotink, Virginia, collected by Mr. J. D. Lucas. It is $3\frac{1}{2}$ inches high, with a greatest diameter of $1\frac{3}{4}$ inches, of cylindrical cross section. The bowl is 2 inches deep and five-eighths of an inch in diameter at the surface, having been drilled with a solid point and not subsequently enlarged, as is the

[1] The Calumet in the Champlain Valley, The Popular Science Monthly, December, 1893, p. 240.

[2] North American Indian Tribes, Pt. 4, p. 141.

case with almost all American pipes. A peculiarity of this bowl is the unusually large size of the stem hole, which is quite as large as is the opening of the bowl itself, the walls varying from one-fourth to one-half of an inch in thickness. Around the outer edge of the rim are twelve notches cut at equal distances; while a totemic figure has been scratched on the smooth surface opposite the stem, the significance of which it is impossible to determine. It consists of eight diverging straight lines, arranged in fan shape, from which one other straight line extends toward the top; from this latter line yet another one projects at an angle of 45 degrees, to the right and down; and two other lines diverge at a like angle on the left. The surface of this urn-shaped bowl was originally smoothed with unusual care, and its outline is quite graceful, though the notches and attempt at totemic ornamentation are extremely crude.

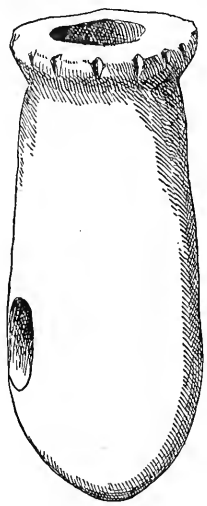

Fig. 52.

VASE-SHAPED PIPE.

Accotink, Virginia.

Cat. No. 42681, U.S.N.M. Collected by J. D. Lucas.

The form of this bowl is graceful, but the scratching is not so rude as to suggest that in such pipes the art of the whites and the Indians is combined, the savage owner having added his barbaric decoration to the object received from the Europeans. Were this the case in a single instance it would be insignificant, but as it is observable in dozens of cases it is tolerably conclusive evidence.

Among bowl pipes of vase-like form they are found to vary from those which are as broad as they are long to specimens having a height four times as great as their diameter. This type is usually made from steatite, or kindred stones, capable of resisting heat, though, as with almost all American pipes, there are numerous exceptions to the rule. One, in the Smithsonian collection, of gray sandstone was found in a cave on Tar River, Yancy County, North Carolina, and another, found in a kitchen heap in Kanawha County, West Virginia, which was made from a brown stone. Other specimens are known of this type made from partially decomposed limestone, feldspar, and even fossil coral. The writer is informed by the Rev. W. M. Beauchamp that this type is frequently encountered in Onondaga County, New York.

Pipes of this urn-shaped type are found also along the headwaters of the St. Lawrence, on the south shores of Lake Ontario and Lake Erie, and along the upper waters of the Ohio and its affluents, a typical specimen being from Accotink, Virginia, while yet other specimens in the U. S. National Museum collection are from New York, Pennsylvania, Ohio, West Virginia, Kentucky, Tennessee, Indiana, and North Carolina.

If the area of distribution of the urn-shaped pipe is compared with the tribal distribution first known to the whites, as it appears on Powell's linguistic map, it will be seen that this especial form of the

bowl pipe is found in Iroquoian territory on the north, through the Algonquin on the south, into the southern Iroquoians. It should be remembered that this area corresponds, reasonably, with the territory influenced by French trade before the advent of the English. The territory also is in the line of travel from the St. Lawrence to the Ohio. The writer is unable to determine how far the urn type of pipe has been governed by European influences. Its contour is similar to that of pottery bowls from Tennessee, specimens of which are in the U. S. National Museum collection.

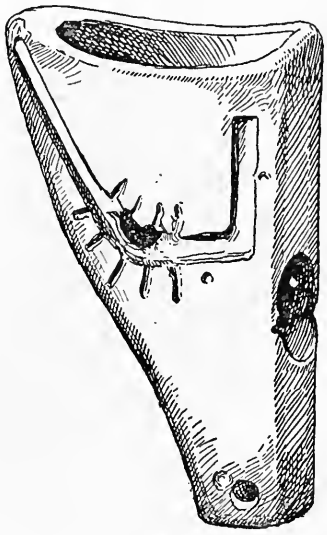

Fig. 53.
RECTANGULAR STONE PIPE.
Sterling, Connecticut.
Cat. No. 17949, U.S.N.M. Collected by J. H. Clark.

Fig. 53 is a rectangular steatite bowl from Sterling, Connecticut, collected by Mr. J. H. Clark. It is $2\frac{1}{4}$ inches high, $1\frac{1}{2}$ inches long from front to back, though only five-eighths of an inch from side to side. The incised three-sided groove shown in the figure is on both sides, and there can be no doubt was intended for the purpose of inlaying with metal or shell, probably the former. The markings radiating from the groove only appear on one side of the bowl. There is a hole bored through the base of this specimen from side to side, evidently intended to receive a string which would be attached to the stem. It appears to the writer that pipes with holes for attaching bowl and stem, or for whatever purpose the hole was intended, are much more common in the North than in the South, which may be because of the greater liability to loss in the snow than in the grass or among leaves. A pipe, however, somewhat similar in general characteristics to this, in the collection of the University of Pennsylvania, is said to have come from North Carolina, though in place of the hole for the string there is a small knob on its base, as though intended for a similar purpose.

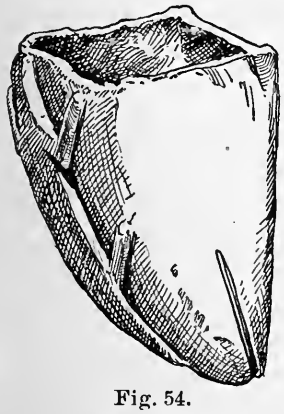

Fig. 54.
ANIMAL PIPE.
Middleboro, Massachusetts.
Cat. No. 6552, U.S.N.M. Collected by S. H. Sylvester.

Fig. 54, from Middleboro, Massachusetts, collected by Mr. S. H. Sylvester, is made of a steel-gray serpentine, and is apparently not alone intended to show the lizard crawling over the convex side of the bowl, but an incision on each side of the lower point would indicate an intention to convey the idea of some animal's head and mouth as well. The sharp edges of the lizard's body, legs, and head indicate the use of a metal tool in cutting the stone. Though the design is apparently of that character which is common among Indian pipes, the shape of the bowl cavity is quite unusual, being square, an uncommon circumstance, though elliptical openings are not rare.

It may be said with some degree of certainty that fig. 55 represents a dog, wolf, or fox. The ears of the animal are carved in relief and the lines representing the mouth are incised. This pipe is made of a steel-gray serpentine, collected by Dr. T. H. Bean from Lancaster County, Pennsylvania. The lines of ornamentation on this pipe are of the most primitive character and strictly in accordance with savage conventionalism, crossing each other in a manner common in Indian etchings, whereas the shape of the pipe itself is not without merit, being graceful and sufficiently accurate to give a fair idea of the animal intended.

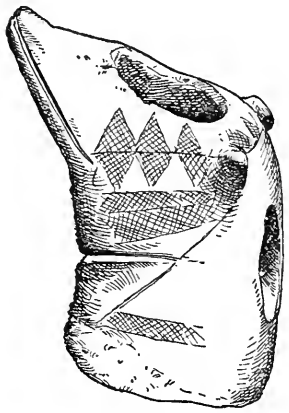

Fig. 55.
ANIMAL HEAD PIPE.
Lancaster County, Pennsylvania.
Cat. No. 27038, U.S.N.M. Collected by T. H. Bean.

There is a cut under the neck of the creature which looks as though it were made with a metal blade, though it appears much more fresh than the rest of the work. There is no other work upon this pipe which may not have been done with the most primitive implements.

A difficulty constantly confronting archæologists is that discoverers of aboriginal specimens frequently scrape incisions with metal tools, making it extremely difficult to distinguish between old lines and new.

This pipe has the bowl and stem hole of like size, each being approximately three-fourths of an inch in diameter at the surface, and therefore resembles the cavities in the biconical pipes, though the latter are seldom, if ever, so small.

Fig. 56, from Piqua, Miami County, Ohio, collected by Mr. C. T. Wiltheiss, is a curious pipe made of a light gray sandstone, in imitation of the head of some animal, though in this case, as in many others, it would be difficult to identify it. The mouth, ears, eyes, and nostrils are each distinctly shown, though the tool marks with which the work was done have been obliterated. In the collection of the University of Pennsylvania Museum there is the head of an animal, carved from a gray sandstone found in West Virginia, not dissimilar to the head here figured, the mouth of which is partly open, showing the tongue.

Fig. 56.
ANIMAL HEAD PIPE.
Piqua, Miami County, Ohio.
Cat. No. 99187, U.S.N.M. Collected by C. T. Wiltheiss.

Fig. 57 is a cast of a curious banded-slate bowl pipe from West Virginia, collected by Mr. B. H. Harrison. Upon the surface facing away from the smoker there is a rudely executed human face. The mouth is an incised straight line, as is the lower end of the nose, the eyes being indicated by slight depressions, evidently made with the point of a drill. Upon the cheeks of this face are a number of irregular figures

cut in parallel straight lines, intended to represent tattoo marks or streaks of paint.

This pipe is 2 inches high, though from front to back it is less than half an inch thick, the bowl being so small that it would scarcely hold a thimblefull of tobacco, the stem hole being so shallow as to prevent a stem being attached without great difficulty. This pipe must be considered rather in the nature of a freak than as belonging to any particular type, and is more in accordance with savage art than are the many specialized objects.

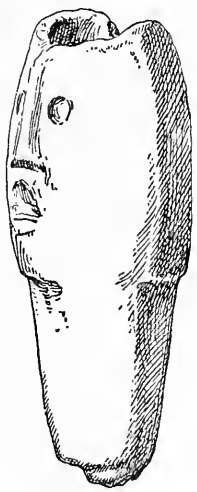

Fig. 57.
HUMAN HEAD PIPE.
West Virginia.
Cast, Cat. No. 98379, U.S.N.M.
Collected by B. H. Harrison.

Fig. 58 represents a cast of a bowl found in Sandusky, Ohio, collected by Mr. Lewis Leppleman, and appears unique among pipes of this type. The figure appears highly conventionalized, though it is sufficiently well shaped to determine that a bird, possibly an owl, was intended. So far as may be determined from the cast, there is no work on this specimen which may not have been accomplished by means of the most primitive implements, even of stone or shell, and could be quite easily executed with the aid of copper.

Fig. 59 is yet another specimen of bowl pipe represented in the U. S. National Museum collection by a cast. It was collected near Valley River, Murphy, North Carolina, by Gen. G. T. Wilder. It is difficult to determine what the head attached to the bowl was meant to represent, though from the crescent-shaped lines on the sides of the bowl it is probably a bird. The head on this bowl is not unlike those on the projections of some of those ponderous pipes found often in North Carolina and Tennessee, and coming from North Carolina is probably merely an evidence of a desire to produce a unique specimen, the bowl and stem cavities being respectively seven-eighths and five-eighths of an inch in diameter.

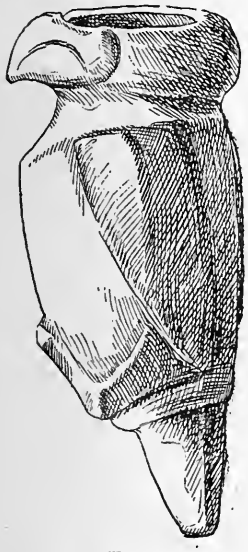

Fig. 58.
BIRD PIPE.
Sandusky, Ohio.
Cast, Cat. No. 35635, U.S.N.M.
Collected by Lewis Leppleman.

Fig. 60 is a finely ground dark green serpentine bowl, which is quite similar to the preceding, though having more graceful lines and being more highly finished. It is shaped to represent a bird's head, the eyes being indicated by circular incisions rudely cut and the beak being of a shape to suggest that an eagle or hawk was intended, though whatever the bird, it is rather of conventional than natural shape, the mouth being represented by symmetrical curves corresponding on each side of the beak. The surface of this pipe is smoothed with such skill that all tool marks have been entirely obliterated, and while the surface is perfectly smooth, there has been no effort made to polish it.

The striæ left by the drill in boring it out are so sharply cut as to leave no room to doubt that the work was done with a tool of metal, quite likely of steel.

The perfection of finish and artistic pose of the bird represented in fig. 61 should be good reason for considering it one of the most perfect of American pipes. It is made of a black serpentine collected in Mineral County, West Virginia, by Mr. J. A. Davis, and represents some water bird, probably a swan or goose. The graceful pose of the head and neck of the bird is nearly perfect. It is represented in the act of dressing its feathers. Well down on the neck are nine sharply incised lines, each three-fourths of an inch long, all of them straight and parallel. The wings extend well down on the body and are slightly raised above the surrounding surface. The breast has been brought to a high polish. Into the surface of it have been drilled about 150 small circular depressions. These shallow holes are scattered without order, though they are nearly equidistant. While many aboriginal stone relics of the Indians are well ground and brought to a smooth surface, polish is of such rare occurrence that one is inclined to suspect white influences wherever it is encountered. Among American implements it is probably more noticeable in the gray tubular serpentine horns from Ohio and West Virginia than in any other objects. It must be admitted there is no work upon this pipe, if we except its polish, which could not be done with primitive tools, though there is doubt if it is purely aboriginal.

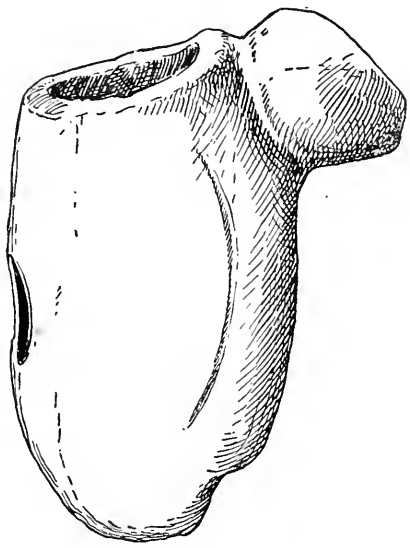

Fig. 59.
BIRD PIPE.
Murphy, North Carolina.
Cast, Cat. No. 30250, U.S.N.M. Collected by G. T. Wilder.

There is in the collection of casts of the U. S. National Museum (Cat. No. 22176) one from Scioto County, Ohio, much on the order of the swan pipe, which was intended possibly to represent a loon.

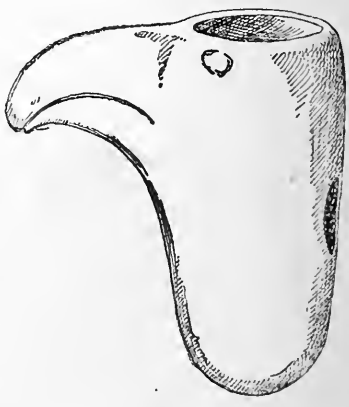

Fig. 60.
BIRD PIPE.
Williamson County, Tennessee.
Cat. No. 19978, U.S.N.M. Collected by M. W. Clark.

Pipes, generally of local types, appear to be found throughout the continent under similar conditions of surroundings to that of other aboriginal objects, on the surface, in shell heaps, in graves of all kinds, among the Pueblo ruins, in the mounds, and in the caves. Even the English trade pipe

has been found 6 or more feet below the surface of the earth associated with implements of the age of stone.

The Rev. W. M. Beauchamp, thoroughly competent to express an opinion on the subject, and especially familiar with the aboriginal remains and implements of New York, considers that the pipes of stone, of which the larger part of New York specimens are composed, are comparatively recent. Until the coming of the whites most New York pipes were of clay, the Narragansetts making those of stone, but with the use of steel tools stone pipes became common. Catlinite pipes, other certainly than the plain rectangular Siouan ones, are probably quite modern, for that material seems to have been almost unknown far from the Siouan sphere of influence until near the close of the seventeenth century.

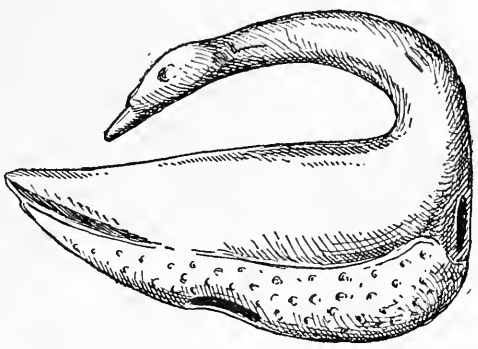

Fig. 61.
SWAN PIPE.
Mineral County, West Virginia.
Cat. No. 11527, U.S.N.M. Collected by J. A. Davis.

Fig. 62 belongs apparently to the bowl pipes, and is made of a brown pottery well mixed with a tempering of pounded shell; it is $2\frac{1}{2}$ inches high, and from the outer edge of the short stem to the far side of the pipe is the same length; the interior of the bowl has a diameter of $1\frac{3}{8}$ inches, with a depth of only 1 inch; the stem hole, one-half the diameter of the bowl, is $1\frac{1}{4}$ inches deep. The dimensions here given would suggest that possibly this pipe should be classed rather with the biconical or monumental pipe than with those of the bowl type. This object is from Mount Vernon Barracks, Alabama, collected by Dr. Joseph K. Corson. The clay and tempering material are well mixed together, while the ornamentation as well as the manner of producing it are unique; the base is flat and smooth; the design on the bowl is in relief about one-eighth of an inch and covers the whole surface, there being a number of notches cut around the top of the bowl and the rim of the stem. As a pipe the design is pleasing, the stem socket being the most pronounced of any of this type; the ornamented surfaces are comparatively smooth, while between the lines in relief, the depressed surface appears to have been made by means of a scraping or cutting tool, the striæ of which are quite distinct and appear to have been produced by having the bowl, when originally burned, of a uniform surface,

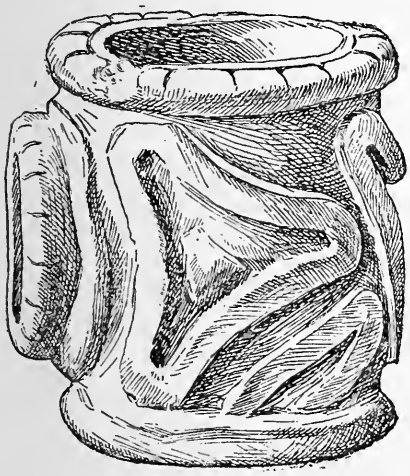

Fig. 62.
POTTERY PIPE.
Mount Vernon Barracks, Alabama.
Cat. No. 19998, U.S.N.M. Collected by Joseph K. Corson.

upon which the design has been traced, and all the rest of the surface scraped or gouged away, leaving the original surface in low relief.

A quaint pipe, made of the base of a deer's antler sawed off where it joins the skull, is shown in fig. 63, from Fort Wrangel, Alaska, collected by Lieut. F. M. Ring, United States Navy. The person who made this pipe has taken advantage of natural form to the fullest extent in leaving the original horn to represent a head covering, or the individual's hair. This grotesque carving is reversible and not devoid of humor, something frequently observed in the carvings and etchings of the Northwest coast. The specimen is evidently modern and made with modern iron tools, though the characteristics are peculiar to the Northwest coast.

Fig. 63.
ANTLER PIPE.
Fort Wrangel, Alaska.
U. S. National Museum. Collected by F. M. Ring.

Fig. 64 presents a combination of savagery and civilization, nature and art, and the present blended with hoary antiquity in a manner than which it were difficult to imagine a more remarkable and striking example. It is from Pottawatomie, Kansas, collected by the National Institute, and is about 4 inches high and made of the outer whorl of an ammonite (probably *Schlœnbachia peruviana*, or *acuticarinata*), the shape of which attracted the curiosity of the Indians. Broken in three pieces, it has been carefully repaired by means of plates of iron on each side, which are held in position by rivets running from plate to plate through the fossil. The face, while rude, is reasonably well modeled and carefully smoothed, and presents the Indian type. Indeed, the work has been so carefully executed as to leave some doubt whether a part of this object, that comprising the head, has not been artificially built up and molded rather than carved from the ammonite. There is no reason to suppose this specimen to be of any considerable age, though it is typically Indian.

Fig. 64.
FOSSIL PIPE.
Pottawatomie, Kansas.
Cat. No. 7825, U.S.N.M. Collected by the National Institute.

Pipes of similar shape to those here figured of the bowl type have been found in many of the States of the Union, though with few exceptions they are noted east of the Mississippi River, and there is no pipe so difficult to place in its proper area as this form; for while certain of them are undoubtedly quite old, others of the same type are certainly of modern workmanship.

Schoolcraft refers to one of these pipes on which a head is carved on the bowl, while on another a lizard is represented crawling up the outside.[1]

Lapham refers also to a bowl pipe found in a mound in Wisconsin, made of argillite, which presents the unusual feature of having a horizontal opening on both sides.[2]

Dr. E. A. Barber refers also to a large stone council pipe belonging to Mr. W. S. Vaux, of Philadelphia, found in a grave in West Philadelphia, which was discovered with a necklace of stone beads, the pipe being 6 inches high, cylindrical, and tapering in form. About 2 inches from the base, which is $8\frac{3}{4}$ inches in circumference, extends a horizontal groove in which have been pierced four equidistant stem holes which extend obliquely downward to the base of the bowl.[3]

Prof. W. H. Holmes called the writer's attention to a bowl pipe made of earthenware, found by Mr. Henry P. Hamilton, at Two Rivers, Wisconsin, apparently intended to represent the bloom of the tobacco plant or possibly an orchid, of beautiful shape, symmetrical in every way, suggesting modern influences though found associated with undoubted aboriginal implements.

Prof. G. H. Perkins also has figured a dark steatite pipe, found on Grand Isle, in Lake Champlain, which he considers one of the most interesting of all the pipes of Vermont, having faces carved upon it in bold relief, with two lines running one from either side of the nose of these faces, and Professor Perkins says there is only one other pipe having a face carved upon it in the Champlain Valley, and "singularly this face also has lines under the nose, which may indicate the mustache of a European."[4]

A pipe of somewhat similar character, made from alabaster, having two faces upon the upper edge of the bowl, is in the Douglass collection, New York City, and was found in Wyandot County, Ohio. Still another stone pipe of this character from Texas, collected by Hon. George M. Keim (Cat. No. 6672, U.S.N.M.), has four faces carved on the upper edges of the bowl, which is somewhat broken. Around the sides of the jaws of this pipe, however, are striae which have every appearance of being made with a file, and the hole for the stem is disproportionately large compared with the opening of the bowl.

While such may exist in museums or private collections, the writer has not encountered any reference to this type of bowl form made from pottery. It is difficult to see how the majority of pipes of this type were attached to their stems because of the thinness of the wall of the bowl and the wide opening of the stem hole, which, because of being drilled with a solid point, is so shallow at its entrance into the

[1] North American Indian Tribes, Pt. 2, plate 44, p. 89.

[2] Antiquities of Wisconsin, p. 28, Smithsonian Contributions to Knowledge, VII.

[3] American Antiquarian, I, p. 113.

[4] The Calumet in the Champlain Valley, The Popular Science Monthly, December, 1893, p. 242.

bowl that it leaves no purchase or room to attach a stem by merely forcing it in tight. This suggests that stems were attached by means of rawhide strips wrapped around bowl and stem while wet and allowed to dry, whereby the stem and bowl would be held together in a manner as perfect as possible.

There appears scarcely a limit to the variations of this type, which was shaped chiefly to suit individual tastes, and was of a form handy to carry. One coming under the writer's notice was made from a pistol cartridge, having a bird-bone stem, held in position by rawhide tightened in the manner above suggested.

It would require a book to itself to attempt thoroughly to treat the subject of pipestems—their decoration, and the material from which they are made, which would include stone, bone, horn, ivory, wood, and quills. Some of the pipes were apparently smoked without stems separate from the pipes, notably the curved base pipes of the mounds, though even they may possibly have had quill stems attached.

Tubular pipes were generally smoked by means of bone, wood, or even stone stems, inserted in the smaller end of the tube, as is indicated by its interior enlargement. In California, and among the Pueblos and cliff dwellers, these mouthpieces were held in position by means of bitumen or gum, though there is little direct evidence as to the method employed in the eastern portion of the United States to hold the tubular pipestems in place; similarity in shape of tube would suggest like methods. Pipestems of wood—round, flat, curved, bent, and carved, long and short—are common from the Rocky Mountains to the Atlantic Ocean, the Indian being governed in the character of stem largely by the supply of material in the territory to which he had access either personally or through trade. Reeds and jointed roots would naturally be employed where available; before the arrival of the whites with their metal, the proposed stem would have to be split through longitudinally; the joints on the inside being removed, the split pieces could be glued together again or bound with bark or hide. The stems, if of wood, would be split in the same manner and each of the split pieces, after having a narrow channel cut along its entire length, could be rejoined, when the channels would form a tubular opening from end to end of the stem, allowing free passage to the smoke. These split pieces, when not refitting satisfactorily, often had strips of hide or bark glued to the crack, when they would be bound in the usual manner.

Judging from such descriptions of pipestems as have been preserved to us through various publications, it will be observed that from the time of the earliest French and English contact with the natives, pipestems have been highly ornamented and often decorated with bright colors, feathers, fur, and dyed hair, and more recently with bright flannel of various shades and large-headed brass or silver nails driven into smooth surfaces in rows or scrolls. The ornamentation of the stems of ceremonial pipes appears to have had great significance, for not only

could one thereby determine to what tribe they belonged, but could even decide at a glance whether the one bearing it came on a friendly or hostile mission. The very early pipes, especially those referred to by the French, we know were red, white, or black, and we rarely find allusions to ornamentation of their bowls, but when we do it refers to color; whereas particulars are usually gone into in reference to the stem, the color of feathers composing the decoration, the birds composing them, or how a hoop of hair was attached to the stem and arranged.

The pipe among many of the tribes appears to have protected its bearer so long as he was on his errand, even among bitter enemies. That the pipe had the sanctity commonly attributed to it by early writers is demonstrably inaccurate, for there are numerous records of the pipe bearers not being received, and even of receiving them and subsequently of escorting them a certain distance from camp and then knocking them in the head with scant ceremony.

All wooden pipe stems are not round; some are flattened parallelograms, others are triangular, ellipsoidal, or even square; some are soft, being made of the quills of birds; others are of stone and of a size offering difficulties in inserting them in the smokers' mouth.

The angle of bowl to stem varies from those in which both are in a common plane to those in which bowl and stem are parallel to each other.

Mr. W. H. Dall relates that "the Hudsons Bay men make passable pipe stems by taking a straight-grained piece of willow or spruce without knots and cutting through the outer layers of bark and wood. This stick is heated in the ashes, and by twisting the ends in contrary directions the heart wood may be gradually drawn out, leaving a wooden tube."[1]

Hind describes a unique pipe used on a certain occasion by a Cree Indian. "I asked," he says, "what he would do for a smoke until he had finished the new pipe. He arose and walking to the edge of the swamp cut four reeds and joined some pieces together. After he had made a hole through the joints, he gently pushed one extremity in a slanting direction into the earth, which he had previously made firm by pressure with his foot. He then cut out a small hole in the clay, above the extremity of the reed, and molding it with his fingers, laughingly said, 'Now give me tobacco, and I will show you how to smoke it.' He then filled the hole with a mixture of tobacco and the bearberry, placed a live coal on the top, and stretching himself at full length on the ground, with his chin supported by both hands, he took the reed between his lips and enjoyed a long smoke."[2]

While this pipe was certainly most primitive, we have an account of one yet more simple, the description of which is taken from a recent newspaper clipping given the writer, in which a glimpse is shown of a

[1] William H. Dall, Alaska and its Resources, p. 81, Boston, 1890.

[2] Hind, The Canadian Red River, II, p. 138, London, 1860.

Kaffir pipe, and a native smoking it to produce stupefaction, as many American tribes have done, and yet do. "He, the Kaffir, first pours a little water on the ground and makes a sort of mud pie; he then takes a limber twig and bends it into the shape of the bow; this he buries in the mud in such a way that both ends protrude a little at the surface. He then waits a little for the mud to harden. When he considers the pie is done to a turn, he pulls out the twig, which of course leaves a curved hole through the clay. At one end he scoops out a sort of bowl, in which he places his tobacco; at the other end he fashions a little mound to serve as a mouthpiece. He drops a live coal on the tobacco in the bowl, lies flat on the ground, applies his thick lips to the orifice and sucks away. He mixes with it a liberal quantity of dagha, a kind of hemp with intoxicating qualities, similar to those of hasheesh. By the time the pipe is finished the smoker falls over in a fit."

The Igorottes, or mountaineers of Formosa, who are head hunters, have a curious custom relating to the pipe. They watch the coast dwellers coming in search of wood, who are attacked and decapitated; when heads to a certain number have been taken by one of them, "he obtains by way of honor the right to sell pipes,"[1] which are little bits of wood representing human heads.

HEAVY ANIMAL AND BIRD PIPES.

We have in fig. 65 a type specimen of the heaviest of any of the American Indian pipes with which the writer is acquainted, and in fact the only one so far discovered which would fully serve, from its size and weight, to "brain a man or a horse," and which was "three-quarters of a yard long." The one here illustrated is from Blount County, Tennessee, collected by Dr. Blankinship. The bird represented may be either owl or parrot, probably the former, and differs from pipes of this type in having the stem hole in the breast of the bird. It is a light bottle-green chlorite, 10 inches long, $4\frac{1}{2}$ inches high, with a width of $2\frac{3}{4}$ inches. The opening of the bowl is about $1\frac{1}{2}$ inches in diameter, that of the stem being about three-fourths of an inch. The surface of this pipe is smoothly worked down except on the back, where the wings are

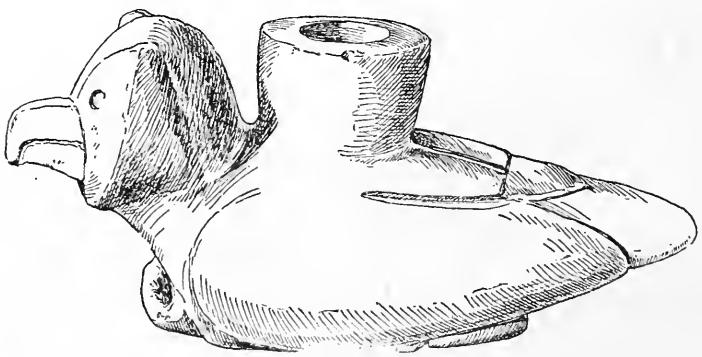

Fig. 65.

STONE BIRD PIPE.

Blount County, Tennessee.

Cat. No. 23300, U.S.N.M. Collected by J. M. Blankinship.

[1] Littell's Living Age, October 19, 1895, quoting La Journal des Voyages.

represented; there the tool marks remain quite distinct. The wings are folded, and the feet are represented as drawn up under the body.

Gen. A. L. Pridemore, of Lee County, Virginia, has a specimen of this character which weighs 3 pounds 2 ounces, which was found under 15 feet of soil in a railroad cut in 1889, and which he thinks represents an osprey. Another specimen belonging to him represents a duck, and

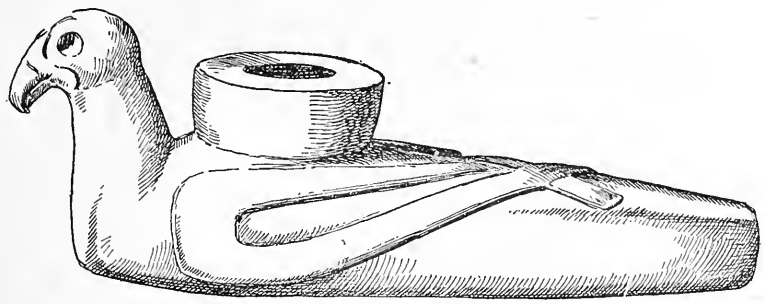

Fig. 66.

STONE PIGEON PIPE.

Decatur County, Tennessee.

Cat. No. 58853, U.S.N.M. Collected by W. M. Clark.

was found twenty years ago in an Indian grave. Quite a number of pipes of this type are figured by Thruston among the antiquities of Tennessee, and others by Joseph Jones, in his work on Tennessee.[1] Jones describes a specimen of "dense, chocolate-colored steatite, representing a bird of prey, probably a bald eagle."[2]

The stem holes in pipes of this type are so placed in a majority of

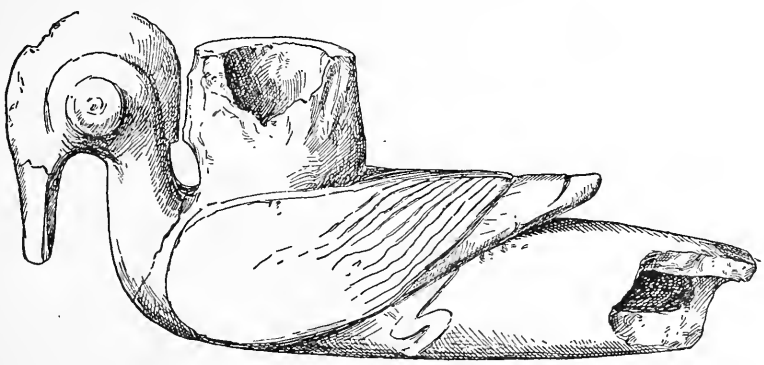

Fig. 67.

STONE WOOD DUCK PIPE.

Cumberland County, Tennessee.

Cat. No 20125, U.S.N.M. Collected by Lorenzo A. Stratton.

instances that the bird or beast—for both are represented—faces from the smoker, and the specimens as a rule are well finished, the tool marks on the exterior being usually entirely obliterated, though the drill marks and evidences of enlargements of the bowls and stems are quite distinct.

[1] Explorations of the Aboriginal Remains of Tennessee, Smithsonian Contributions to Knowledge, No. 259.

[2] Idem, p. 103, fig. 58.

There can be but little doubt that fig. 66 is a representation of a wild pigeon, a bird which but a few years ago migrated south in the fall and north in the spring to their breeding grounds. They were in such vast numbers as to break the limbs of the trees where they stopped to roost or to feed on acorns, and in their flight would obscure the face of the sun for hours at a time. This pipe was found in Decatur County, Tennessee, collected by Mr. W. M. Clark; it is 11 inches long, 4 inches high, and the bowl is 2 inches in exterior diameter, the diameter of the interior of the bowl being $1\frac{3}{8}$ inches, and the opening of the stem, which is located under the tail of the bird, is about one-half the diameter of the bowl; and as a rule this proportion of the bowl and stem holes will hold good in the type. The head and body of this bird are tolerably well formed, though the wings, it may be seen, are treated in a purely conventional manner, crossing on the back near their points, the bird being carved from a black chlorite. The eyes of these birds are depressed, though it would be difficult to say whether it was intended in any case to insert artificial ones. The pigeon, like the buffalo, has disappeared so completely from its former haunts, that one would hardly know which way to turn to obtain a specimen were it desired for a collection.

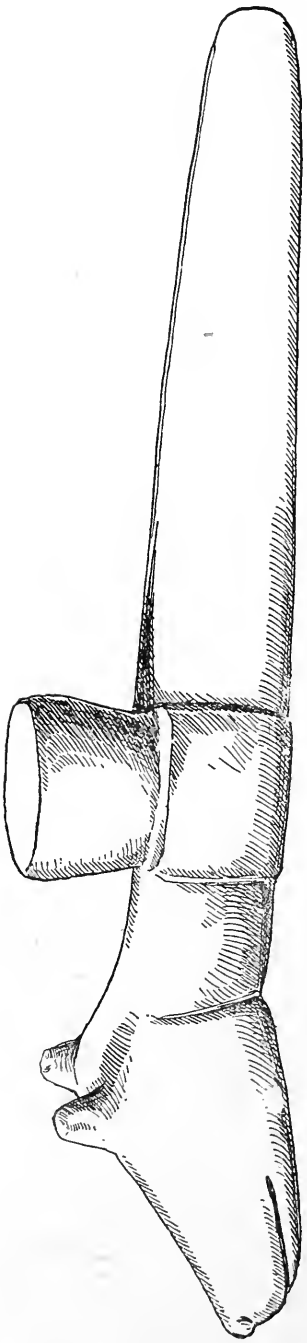

Fig. 68.
ANIMAL HEAD, STONE PIPE.
Jackson County, North Carolina.
Cat. No. 98029, U.S.N.M. Collected by G. A. Jacobs.

Unfortunately the specimen is broken, yet what remains of fig. 67 is an unusually spirited example of the wood duck—of all American birds the one with the most beautiful plumage. It is of steatite, from Cumberland County, Tennessee, is 9 inches long, 4 inches high, and $4\frac{1}{2}$ inches wide; and was collected by Mr. Lorenzo A. Stratton. The break of this pipe is through its plane of cleavage, and as the specimen has been completed the break has occurred since it was finished. The crest and legs of the bird, the latter poorly executed, leave no doubt that the wood duck was intended. The feathers are rudely designated on the wings in wavy lines with the point of some rude tool, possibly of stone.

It is remarkable that the stems of certain of these pipes are so worn on their outside as to indicate that they have come in direct contact with the teeth of the smoker, though the ordinary interior stem enlargement is similar to that of the elongated conical pipes of California. Lanman probably referred to a pipe of this character, found in 1848 or earlier, 15 feet below the surface, in Macon County, North Carolina, made in imitation of a duck.[1] A broken specimen from Ohio above Cincinnati is in the Museum of the University of Pennsylvania.

Fig. 68, from Jackson County, North Carolina, collected by Mr. G. A. Jacobs, is an unusually large specimen of an unfinished pipe, made of steatite, which is 19 inches long, 4 inches high, and 3 inches wide, and weighs 9¾ pounds, and used as a weapon would really be terrible.

There are few surface indications showing the striae of the tools with which these implements were originally made, and it is impossible to say from an examination of many specimens whether stone or metal tools were used, as the surfaces have been smoothed off. As the shape of this pipe is perfect, it would indicate that it was intended for use in its present condition. If, however, it was intended that the bowl and stem were to be bored out, which was probably the case, it would indicate that this was one of those "great pipes" to which reference is so often made in works of early North American travel, the size of which distinguishes them from pipes intended for individual use. Pipes of this type vary from 6 to 19 inches in length, and are apparently totemic. One specimen in the U. S. National Museum (Cat. No. 34383), from Anderson County, Tennessee, collected by Mr. W. H. Taylor, has a head on it, but it is impossible to determine whether it represents a turtle or a bird, though the head in the last illustration was probably that of a dog or wolf. Another specimen, representing an animal, has the legs cut out in low relief, so that they look as if they were made of separate pieces subsequently glued to the surface.

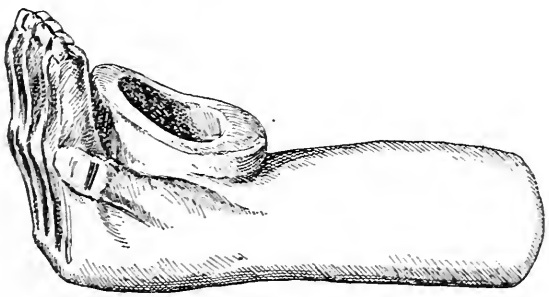

Fig. 69.

HUMAN HAND AND ARM.

Western Tennessee.

Cat. No. 97433, U.S.N.M. Collected by W. M. Clark.

Though differing in several respects from the preceding specimens, fig. 69 appears in bowl and stem characteristics to belong to the type here described, though it is made of a dark, almost black, chlorite. It is from western Tennessee, collected by Mr. W. M. Clark, and is 6 inches long, 3 inches high, and 2½ inches wide, and represents a bowl being held in six fingers of a left hand. The knuckles and nails are all well represented. A similar specimen, though of pottery, from Arkansas, will be found among the biconical pipes (fig. 162), where this would

[1] Charles Lanman, Letters from the Alleghany Mountains, p. 24, New York, 1849.

have been placed were it not that the size of the stem opening and of the opening of the bowl were so typical of these heavy pipes. Another hand, holding some object, is in the Steiner collection, from the Etowah mound, Georgia. Thruston in his Antiquities of Tennessee represents a pipe of this general type, the figure being a bird with outstretched wings,[1] and another in which the bird is on its back, the bowl protruding from its breast.[2] One specimen represents the human foot and a part of the leg, the bowl coming out on the shin bone near the instep.[3] In this specimen the toes are well carved.

The occurrence of the hand, arm, foot, and leg in pipes of this type would suggest that they were exceptions to the general rule and have no totemic significance.

In many of its characteristics fig. 70 would appear to belong to this type, yet in some respects there are features which would possibly entitle it to be classed in an indeterminate group. This pipe is from Chillicothe, Ohio, collected by Dr. E. H. Davis, and has the body and wings of a bird, with the head of a man facing to the right of the smoker; and an enlargement along the back of the man's head and neck is suggestive of the old-fashioned cue of the whites. The stem of the pipe enters the bowl, intersecting it at right angles, and is perforated through the wing instead of under the tail, as is commonly the case. A clay pipe, representing a panther facing to the right, is among the Iroquoian pipes and other specimens of men and birds or beasts are from New York and Ontario, and a bird on a mound pipe from Illinois faces also to the right.

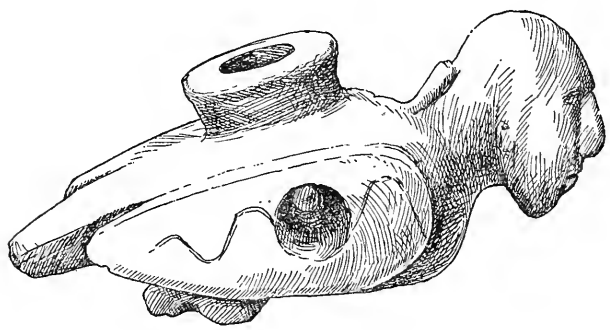

Fig. 70.
BIRD WITH HUMAN HEAD.
Chillicothe, Ohio.
Cast, Cat. No. 7211, U.S.N.M. Collected by E. H. Davis.

Old Chillicothe, on the Little Miami River in Ohio, is the place to which Daniel Boone, in 1780, says he was carried a prisoner by the French and Indians, by whom he was captured, though while a prisoner he appears to have been treated with unusual consideration, the king of the Shawnees, he says, having adopted him.[4]

Squier and Davis illustrate a pipe of this general character, though of the tubular type, bowl and stem being in the same plane, upon which a bird is carved with its back attached to the tube, found in a mound on the Catawba River, Chester District, South Carolina, the specimen

[1] Antiquities of Tennessee, p. 203, fig. 105.
[2] Idem, p. 205, fig. 108.
[3] Idem, p. 190, fig. 87.
[4] John Filson, Histoire de Kentucke, pp. 74, 79, Paris, 1785, translated from English by John Parrand.

being 10 inches long and 2 inches wide, weighing a little less than 4 pounds.[1]

While steatite appears to be the most common mineral employed in making these pipes, chlorite and serpentine were also used at times. An examination of the dimensions of bowls and pipes of the American Indians demonstrates almost conclusively that the size of bowl and stem are in relative proportion through contiguous territory, with scarcely an exception in any given type, though material and exterior finish vary considerably. Gen. A. L. Pridemore has a pipe of this type, having upon it the head of an eagle, and another a duck, from Lee County, Virginia, which he considers of Cherokee origin. Mr. A. F. Berlin, of Allentown, Pennsylvania, has a white stone pipe, a surface find, from Franklin County, North Carolina, in the shape of a duck, the bowl of which is rectangular. The University of Pennsylvania has a bird pipe catalogued from Georgia, and a specimen of this type in the Douglass collection from Cumberland County, Kentucky, has engraved upon its side the figures 1714. The wings, tails, and topknots of birds in this type are usually highly conventionalized, and in only one instance does the writer recall an effort having been made to represent individual feathers, and even in that case the work was quite rudely done.

Pipes of this kind are of the most ponderous character of any American type known, and Strachey's description of the pipe would really answer for this, and he does not exaggerate when he says the pipe of a "Susquehannock Indian" was "three-quarters of a yard long, prettily carved with a bird, a deare, or with some such device at the great end sufficient to beat out the braynes of a horse,"[2] though he has evidently copied John Smith's earlier description, who asserted that these pipes were sufficient to beat out a man's brains.[3]

This pipe appears also to be the only one which satisfactorily answers John Smith's description of having carvings at their great ends.

USE OF PIPES AND TOBACCO BY THE WHITES.

English and American authors usually give to Sir Walter Raleigh the credit of introducing tobacco into Europe about the year 1586, though it is highly probable the French had used it at an earlier date; the Spanish certainly used it even earlier than the French.

In 1585 Sir Richard Grenville had command of the expedition of Sir Walter Raleigh, consisting of seven sail, an account of which we have from the pen of Ralph Lane, one of the captains of the fleet. In 1586 Sir Francis Drake also visited the colony of Virginia, from which time the coast of the continent became familiar to European sailors.

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[1] Ancient Monuments of the Mississippi Valley, p. 226.

[2] William Strachey, Historie of Travaille into Virginia, p. 40, 1612 (Hakluyt Society).

[3] William Stith, History of the First Discovery and Settlement of Virginia, p. 68, 1747, Sabin reprint, New York, 1865.

Among discoverers of the coast prior to 1610, as mentioned by Henry Ellis, were Capt. John White in 1587, B. Gosnell in 1602, George Weymouth in 1602, Hendrick Hudson in 1607,[1] and John Smith in 1606 and 1608. All of whom were of course preceded by the Spanish and Ribault made the coast of Florida in 1562 with a French expedition, who, after discovering the St. Johns River, went up the coast to Port Royal, located a fort, and returned to Europe. The garrison quarreled, and Laudoniere in 1564 again reached the coast with Ribault. The third French expedition carried a thousand men or more, all of whom, it is asserted, were massacred the same year by the Spaniards, who a few years later were themselves massacred by Gorgues, a Frenchman. These people were followed by a host of minor adventurers whose names have not survived, and all we know of them is from some casual remark of a certain number of sail being in port, or it may be some writer referring to objects of European manufacture being in the Indians' possession which could only have come from a wreck. From about 1610 the American continent became the storehouse which supplied material for European adventurers. They fished the waters and roamed the woods in search of peltries, especially those of the mink, the beaver, and the otter, which they trapped or bought with trinkets of white man's manufacture always made for aboriginal trade or exchange. Almost annually, beginning with Raleigh's expedition, voyages doubled in number, and after the year 1600 Spanish, French, English, and Dutch, regular traders and pirates, fought and schemed against each other, often publishing erroneous reports, and it is even asserted going to the extent of issuing false maps for the purpose of misleading their rivals. The Spanish and French on the coast of Florida and the Carolinas cut each other's throats until they both abandoned their possessions. Subsequently the English occupied the Carolinas, and on the northern coast French, Dutch, and English were repeatedly guilty of the rankest acts of piracy upon each other. The French settled in Canada, and the Dutch held tenaciously to the trade of New York, and tobacco became a most important article of merchandise over the greater part of the continent. Gaffarel claims that Thevet, a Frenchman, is entitled to the credit of introducing tobacco into France as early as 1554.[2]

On the other hand, it is asserted that tobacco was first brought into Europe in 1558 by Francisco Fernandez, a physician who had been sent by Philip II of Spain to investigate the products of Mexico.[3]

Jean Nicot, ambassador of Francis II to Don Sebastian, King of Portugal, about 1559, sent seeds of the tobacco plant to Queen Catherine De Medici, and his services were commemorated by the scien-

[1] Henri Ellis, Voyage à la Baye de Hudson, Leyden, 1750.

[2] Justin Winsor, Narrative and Critical History of America, IV, p. 31.

[3] Encyclopædia Britannica.

tific name *Nicotiana*. According to Nadaillac the Spaniards and Portuguese introduced tobacco into Europe in 1518. Cortez sent seeds of the plant to Charles V. Raleigh offered tobacco as a present to Queen Elizabeth in 1586, whence the use of it spread to Holland, then to the numerous colonies of these two countries, and thence with a strange rapidity to Asia, Africa, and the limits of the habitable world.[1]

William Bragge calls attention to a matter which could not fail to impress any one at all familiar with the subject that "the early bibliography of tobacco develops the fact that its introduction was greatly facilitated by the supposed benefits which its use would afford the individual from a medicinal standpoint."[2]

Bragge's collection of pipes, now in the British Museum, made from all parts of the world, and his books relating to tobacco, the former consisting of 13,000 specimens and the latter of 500 volumes was as rich as it was curious, and has probably never been equaled. The medicinal and imaginary properties attaching to tobacco have been marked among the American Indians to no greater extent than in Europe. Rembert Dodoens in 1578 said "the perfume of dryed leaves, he sayd he layde upon quick coles taken in the mouth through the pipe of a funnel or tunnel, helpeth such as are troubled with shortness of winde and fetch their breath thicke and often."[3]

Thomas Hariot, who accompanied Raleigh's expedition to Virginia in 1584, says: "there is an herbe which is sowed apart by itself and is called by the Indians uppowoc; in the West Indies it hath divers names, according to the several places and countries where it groweth and is used. The Spaniards generally call it tobacco. The leaves thereof dried and brought into powder they use to take the fume thereof by sucking it through pipes made of clay into their stomach and head; from whence it purgeth superfluous fleame and other gross humors, and openeth all the pores and passages of the body, by which means the use thereof not only preserveth the body from obstructions but also (if any be, so that they have not been of too long continuance) in short time breaketh them whereby their bodies are notably preserved in health and know not many grievous diseases wherewith we in England are oftentimes afflicted."[4]

This is probably the first reference to the use of tobacco by an Englishman, and even at the present time such an indorsement of the virtues of a newly discovered plant by a distinguished authority could not fail to be an invaluable advertisement for its use, for Hariot, who carried the tobacco plant to his patron, Raleigh, a favorite at the court

[1] Nadaillac, Les Pipes et le Tabac; Matériaux pour l'Histoire Primitive et Naturelle de l'Homme, November, 1885, pp. 498, 499.

[2] William Bragge, Bibliothica Nicotiana, Birmingham, 1880.

[3] E. A. Barber, The Antiquity of the Tobacco Pipe in Europe, quoting Rembert Dodoens on the virtues of colefoot in the historie of plantes, American Antiquarian, II, p. 6.

[4] Thomas Hariot, Hakluyt's Voyages, III, p. 330, London, 1810, from edition of 1600.

of Queen Elizabeth, appears to have been a botanist of some repute. That Hariot's views concerning the wonderful properties of tobacco were not concurred in by all there can be no doubt, for "it was feared," says Camden, "that by the practice of smoking tobacco *Anglorum corpora in barborum degenerasse videantur*."[1]

"Lane and his associates" [of Raleigh's expedition], says Robertson, "by their constant intercourse with the Indians, had acquired a relish for their favorite enjoyment of smoking tobacco. They brought with them a specimen of this new commodity to England and taught their countrymen the method of using it."[2]

This is reiterated by Stith, who adds that Raleigh is said to have taken a pipe of tobacco a little before he went to the scaffold, and quotes Camden as thinking that Lane and his associates carried the first tobacco to England, and says: "Sir Walter Raleigh, a man of gaiety and fashion, readily gave in to it, and by his interest and example soon brought it into such vogue at court that many great ladies, as well as noblemen, made no scruple sometimes to take a pipe. It is certain the Queen gave great countenance and encouragement to it as a vegetable of singular strength and power, which might therefore prove of benefit to mankind and advantage to the nation."[3]

There are many anecdotes connected with Raleigh and his use of tobacco, none of which has been oftener repeated than the following: "Sir Walter was smoking in his study, and, being thirsty, called for his servant to bring him a tankard of beer. Jack hastily obeyed, and Sir Walter, forgetting to cease smoking, was in the act of spouting a volume of smoke from his mouth when his servant entered. Jack, seeing his master smoking prodigiously at his mouth, thought no other but he was all on fire inside, having never seen such a phenomenon in all England before, dashed a quart of liquor at once in his face, and ran out screaming, 'Massa's afire! Massa's afire!'"[4]

On another occasion "Sir Walter wagered with the Queen that he would determine exactly the weight of smoke which went off in a pipe of tobacco. This he did by first weighing the tobacco and then carefully preserving and weighing the ashes; and the Queen readily granted that what was wanted in the prime weight must be evaporated in smoke. And when she paid the wager she said pleasantly that she had heard of many laborers in the fire that turned their gold into smoke, but Raleigh was the first who turned his smoke into gold."[5]

Spenser, who was a friend of Raleigh, shows in the Faerie Queene,

[1] Sir Robert H. Schomburgk, Raleigh's discovery of Guiana, Introduction, p. xxxiv (Hakluyt Society).

[2] William Robertson, America, p. lix.

[3] William Stith, The History of the First Discovery and Settlement of Virginia, p. 21, New York, 1865, Sabine reprint.

[4] Samuel G. Drake, History and Biography of the Indians, p. 113, note, Boston, 1857.

[5] Stith, The History of the First Discovery and Settlement of Virginia, p. 21.

1590, that the supposed medicinal properties of tobacco had much to do in promoting its use.

> Into the woods thenceforth in haste she went,
> To seeke for hearbes that mote him remedy;
> There whether divine tobacco were,
> Or panachaea, or Polygony,
> She found and brought it to her patient deare;
> The soveraine weede betwixt two marbles plaine
> She pownded small and did in peeces bruze;
> Then atween her lilly handes twaine
> Into his wound the juice thereof did scruze.[1]

Paul Hetzner, who visited England in 1598, says, as quoted by Fairholt: "At these spectacles and everywhere else the English are constantly smoking tobacco, and in this manner: They have pipes on purpose made of clay, into the further end of which they put the herbe so dry that it may be rubbed into powder, and putting fire to it they draw the smoke into their mouths, which they puff out again through their nostrils like funnels."[2]

Aubrey, in 1600, speaking of Raleigh being the first one to popularize tobacco in England, says: "In our part of North Wilts, e. g., Malmsbury Hundred, it came first into fashion by Sir Walter Long. They had first silver pipes; the ordinary sort made use of a walnut shell and a straw. I have heard my grandfather Lyte say that one pipe was handed from man to man round the table."[3]

Of all pipes referred to none appears more primitive than this straw and shell, though it is an additional evidence that to obtain the smoke its votaries will employ anything available to hold the tobacco.

"In 1601 Mr. Secretary Cecil, in a speech, alludes to the then existing monopoly enjoyed by the tobacco pipe makers' guild, which, however, was not regularly incorporated until 1619."[4]

At Elizabeth Island, in 1602, Gosnoll says "no place yields finer tobacco than this island."[5]

The English were looking to the cultivation of tobacco as a source of revenue, for it must be evident the whites were eager to trade with the natives for their peltries, than which nothing brought greater profit and naturally few things had more solid value than a supply of their favorite plant.

The English clay pipe of commerce, or the "trade pipe," as it is more commonly called, which is often found on Indian village sites, both in and on the aboriginal shell heaps of the Atlantic coast, as well as in Indian graves throughout a large part of the territory near the middle Atlantic

[1] Edmund Spenser, The Faerie Queene, III, stanzas xxxii and xxxiii.

[2] F. W. Fairholt, Tobacco; its History and Associations, p. 58, London, 1859.

[3] Idem, p. 57.

[4] Llewellynn Jewitt, Ceramic Art in Great Britain, I, p. 295, New York, 1878.

[5] John Harris, Voyage to the Northern Part of Virginia by Captain Gosnoll, Voyages and Travels, I, p. 816, London, 1705.

seaboard, was, immediately upon its introduction, eagerly bought by the Indians and was also imitated in primitive pottery, the clay of which was mixed with shells. This was certainly the case along the shores of the Chesapeake Bay during the first half of the seventeenth century. There was, however, in 1605 an insufficient supply of molded pipes among the natives, judging from a remark of Weymouth, who, referring to those of primitive form in latitude 41½° on the Atlantic seaboard, says they were "sometimes made of earth, sometimes of the claw of a lobster; but t'was always something that would hold ten or twelve of ours."[1]

This remark, however, evidences that the English had a particular pipe; that it was of diminutive size, and held scarcely more than a thimbleful of tobacco.

To such an extent was the use of tobacco carried that every effort was made to suppress it, not alone because its odor was to some objectionable, but because of the vast sum which in the aggregate went into its purchase and was dissipated in smoke. The opposition became one of statesmen and of the church; and rigorous laws were passed to suppress its importation into Europe, and severe penalties were imposed on those found smoking in public. There is a certain uniformity in the character of the English trade pipe, the type varying only in the angle of the bowl with the stem, the bowl eventually increasing from quite a diminutive size to its present dimensions. The exterior of these trade pipes are interesting in that they were stamped to suit the maker's fancy, all being molded from a clay which turned white on burning, and on the flat heels of which the owner's name or initial was often impressed in the clay mold. Sometimes, however, it was more elaborate, as for example a man on horseback, a lily, or other device. Later these designs were transferred to the sides of the bowl, one coming under the writer's observation having upon one side of the bowl a figure evidently representing St. George and the dragon, and upon the opposite side Britannia and the lion. This pipe was found in the shell heap under the old French fort at Castine, Maine. Again the representation would be a rose or other flower, and yet more recently the name is found impressed on the stem. All these stamps were intended evidently as advertisements of the particular ware or output of a given factory. The smaller pipes are supposed to be the more ancient by those who have given this feature great attention. The writer is inclined to concur in this opinion from the fact that the most diminutive pipes of the trade type are those which have bowl and stem nearest approaching the straight tube, for during the last two hundred and fifty years the shape has gradually changed until the bowl is at present at right angles to the stem. The small size of the bowl was due to the scarcity and value of the dried plant, its enormous cost being a result

[1] James Rosier, Voyage to Virginia, by Henry, Earl of Southampton, and the Lord Thomas Arundel, performed by Captain Weymouth, John Harris, Voyages and Travels, I, p. 817, London, 1705.

of the many restrictions on its use. The importation of tobacco into England was discouraged by enormous taxation, and there appears to have been a fear felt lest its use would not only impoverish the citizen, but that it was in addition liable to cripple the finances of the nation. There does not appear to be any positive knowledge as to the form of the earliest English pipes, consequently we are forced to a comparison of known English forms with those of the supposed primitive pipe from which the English clay pipe is copied. The heel of the pipe became in time a sharp spur, that decreased until it is now scarcely discernible.

Dr. E. A. Barber refers to a trade pipe with the initials R. T. on its heel, which was found in an Indian grave in Chester County, Pennsylvania, probably the manufacture of one Richard Taylor, of Bath, England; and another was found in Lancaster County, Pennsylvania.[1]

The writer possessed a heeled clay pipe which was found, while digging a well, 6 feet under the surface in Anne Arundel County, Maryland. A similar one was found in an Indian grave in Montgomery County, New York. They have also been found by Mr. Frey, of Palatine Bridge, New York, in Indian graves.[2]

The first tobacco-pipe maker in America of which there is record was Robert Cotton, whose name appears among those arriving in 1608 at Jamestown, Virginia, in the *Phœnix*, the first supply vessel.[3]

Tobacco soon became the crop of Virginia and Maryland, to the exclusion of those crops essential to sustain life, owing to its high price and scarcity.

As has been remarked, the Indians at times used other plants than tobacco for smoking, just as in Scotland it was formerly said to be "common for the old wives of Annandale to smoke a dried white moss," gathered on the neighboring moors, which they declared to be much sweeter than tobacco, and to have been in use before the American weed was heard of.[4]

Percy, in 1607, speaks of the Indian of Virginia "with his arrow ready in his bow in one hand and taking a pipe of tobacco in the other, with a bold uttering of his speech, demanded of us our being there, willing us to begone."[5]

Gabriel Archer, in 1607, speaks of the habitation of the "Great King Pawahtah," whose people gave us tobacco, which plant is referred to as among those grown by Powhatan.[6]

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[1] American Naturalist, XIII, p. 296.

[2] Antiquity of the Tobacco Pipe in Europe, American Antiquarian, II, p. 6.

[3] T. Studly and A. Todkell, Proceedings and Accidents with the First Supply in Virginia, p. 108, in Arber's edition of Smith's Works.

[4] Daniel Wilson, Prehistoric Annals of Scotland, IV, p. 504, London and Cambridge, 1863.

[5] G. Percy, A Discourse of the Plantation of the Southern Colony of Virginia, plate LXVI, in Arber's edition of Smith's Works.

[6] Gabriel Archer, A Relation of the Discovery of our River, p. xliii, in Arber's edition of Smith's Works.

Percy refers to an Indian pipe in 1607, which, he says, "was artificially made of earth, as ours are, but far bigger, with the bowl fashioned together with a piece of fine copper."[1]

An offering of tobacco was made to the English in 1607 at Dominico, within 14 degrees of the line, north latitude.[2]

It is difficult to understand what was intended by the expression "fashioned together with a piece of fine copper." Was it that the pipe had a bowl lined with copper, as is not uncommon with pipes of wood in the Northwest, or is the copper here referred to the tool with which the pipe was made?

An extremely interesting stone pipe is in the collection of the museum of the University of Pennsylvania, which was found at Chelsea, Massachusetts. About half an inch of the stone stem has been broken off. The piece has been replaced and is firmly held in position by a thin copper band about an inch wide, which is neatly fitted around the stem, reaching above and below the fracture and holding it in place.

Strachey refers to an offering of tobacco made to the expedition on the coast of Maine by "sixteen savages in three canoes;"[3] and an offering of a similar character was made in 1608 to John Smith by the Susquehannock Indians, at the head of Chesapeake Bay, of "bows and arrows and tobacco pipes." One of these Indians, Smith says, had "the head of a wolf hanging in a chain for a jewel, his tobacco pipe, three-quarters of a yard long, prettily carved with a bird, a deare, or some such devise at the great end, and sufficient to beat out one's braines, with bows, arrows, and clubs suitable to their greatness."[4]

Near the same place Smith encountered the Massowomekes, whose "targets, baskets, swords, tobacco pipes, platters, bows and arrows shewed they much excelled those of our parts, and their dexterity in their small boats, made of the barks of trees, sowed with bark and well luted with gum, argueth that they are seated upon some great water."[5]

These Massowomekes, the writer is informed by Mr. James Mooney, belonged to the Five Nations, people who commonly used birch bark, and whom we know were at that period living within touch of the French located on the St. Lawrence, or River of Canada, as it was then called, and who received their articles of metal directly from the French. Had the colonists followed the example of Smith and avoided the disputes and disagreements with which they were constantly burdened, they would have attained, as he has said, great happiness "had they

[1] G. Percy, A Discourse of the Plantation of the Southern Colony of Virginia by the English, Introduction, p. lxiv, in Arber's edition of Smith's Works.

[2] Idem, p. lxiv.

[3] William Strachey, Historie of Travaille into Virginia, p. 176 (Hakluyt Society).

[4] The Voyages and Discoveries of Capt. John Smith in Virginia, p. 350, in Arber's edition of Smith's Works.

[5] Idem, p. 367.

not so much doated on their tobacco, on whose fumish foundation there is small stability, there being so many good commodities besides."[1]

H. Spellman refers as early as 1609 to the pipe being used in the dance in Virginia. "They use," he says, "sports much like ours here in England, as their dancing, which is much like our Darbyshire horn-pipe, a man first and then a woman, and so through them all, hanging all in a-round. There is one which stands in the midst with a pipe and a rattle, which, when he begins to make a noise, all the rest giggetts about, wrying their necks and stamping on the ground."[2]

This description of the dance of the Potomacs would apply to the dance of the Natchez on the Mississippi ten years earlier or to that of the Sioux of to-day.

Strachey describes "a clay the Indians call *assequeth*, whereof they make their tobacco pipes, which is more smooth and fyne than I have elsewhere seen any."[3] A note identifies this *assequeth* with catlinite, though the assertion does not appear warranted by the facts.

The natives of Maryland and those of the coast countries north and south of Maryland possessed a fine clay, from which pipes were made of a bright red color, examples of which coming under the writer's observation would justify Strachey's remarks. He considered the tobacco of Virginia in 1612 inferior to that of "Trinidado" or of "Orinoque," growing 2 or 3 yards from the ground, which the natives smoked, "stalk, leaves, and all, taking the same in pipes of earth, which very ingeniously they can make."[4] He also informs us that the unmarried Indian did not use tobacco.

Smith calls the tobacco pipe "pawpecones," while Strachey says it was "apokan."[5]

William Parker, in 1615, shows that the pipe was extended in hospitality by the Indian to his visitor, for "the first thing Powhatan did he offered me a pipe of tobacco, then asked how his brother, Sir Thomas Dall, did."[6]

The guild of tobacco-pipe makers was, according to Fairholt, incorporated October 5, 1619.[7]

By this time the cultivation of tobacco had become an extensive industry and the manufacture of pipes a regular trade. The arms of the tobacco-pipe makers' craft, which was displayed on all public occasions, was a growing tobacco plant, the private mark being on the heel

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[1] John Smith, Advertisements for the Inexperienced, or the Pathway to Erect a Plantation, p. 95, in Arber's edition of Smith's Works.

[2] H. Spellman, Relation of Virginia, p. cxiv, 1609, in Arber's edition of Smith's Works.

[3] William Strachey, Historie of Travaille into Virginia, p. 32 (Hakluyt Society).

[4] Idem, pp. 121, 122.

[5] Idem, p. 44.

[6] William Parker's Recoverie from Among the Savages, R. Hamor, edited by Capt. John Smith, p. 518, in Arber's edition of Smith's Works.

[7] Tobacco and Its Associations, p. 166.

of the pipe in most cases. Sometimes a lily or a chicken was the conventional mark by which the ware or maker could be known in trade. For nearly three centuries Broseley, in England, has been one of the principal seats of the manufacture of pipes.[1]

Pritchett, in Ye Smokiana, illustrates a sturdy German smoking a pipe, taken from an illustration at Frankfort-on-the-Main, dated 1616,

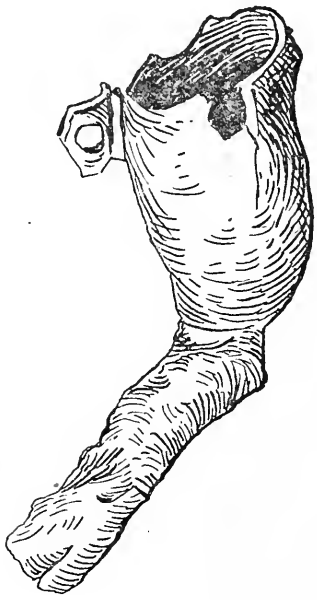

Fig. 73.

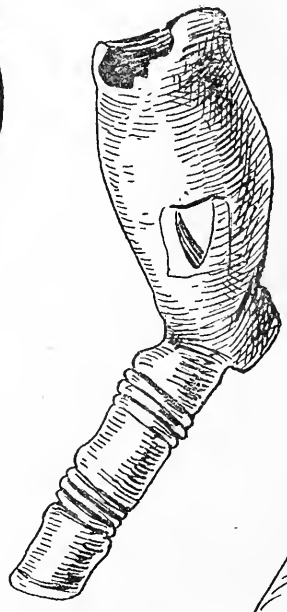

Fig. 72.

Fig. 71.

Figs. 71–73.

IRON, BRONZE, AND CLAY PIPES.

showing the smoker to be holding up the rectangular trade pipe, with his head thrown back as though he was smoking a tubular pipe, which would indicate that the practice at that period was novel.

Guda, near Rotterdam, Sevres, in France, and Dresden, in Germany, have been the sources of supply in their respective countries. "In the neighborhood of Bath (England) pipes were apparently made in the

[1] E. A. Barber, Antiquity of the Tobacco Pipe in Europe, American Antiquarian, II, p. 3.

beginning of the seventeenth century, and some of the examples bear a shield with a branch of the tobacco plant."[1]

Numbers of early English pipes are found in and near London, at times as much as 12 feet below the present surface of the ground, which were smoked with tobacco, and very likely other plants, in the plague of 1664 and 1665, which carried off so large a portion of the population of the city.

Opinions have differed as to the antiquity of the tobacco pipe in Europe, though at present the weight of authority would appear opposed to the belief of any pre-Columbian tobacco pipes. In figs. 71, 72, and 73 are presented three very primitive pipes, which, judging from the angle of the bowl with the stem, are as old as any form of English clay pipe which has come under the writer's observation. They are drawn after sketches furnished Dr. E. A. Barber by M. N. Cournault, of Malréville, near Nancy, France. Fig. 71, which is of clay, is in the National Library of Paris, and approaches closely the tubular form. The lily upon the stem would indicate a French origin. Of fig. 72 less can be said; its age would appear considerable, and it resembles a pipe figured by Baron Bonstetten, as from Roman ruins in Switzerland. It is made of bronze. Fig. 73 is an iron pipe from Meurthe et Moselle, in the collection of M. Hutton, who has a similar specimen from Camp de Châlons, Marne.

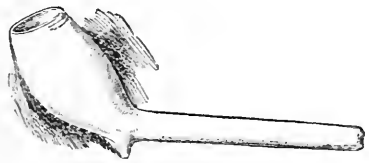

Fig. 74.
DUTCH FORM OF CLAY TRADE PIPE.
London, England.
Cat. No. 45585, U.S.N.M. Collected by E. Lovett.

Notwithstanding the finding of these bronze and iron pipes associated with remains of the Roman period,[2] the writer is inclined to doubt that they are of an antiquity as great as supposed, though many persons are of different opinion. These metal pipes differ too slightly to justify their being considered distinct from trade pipe forms.

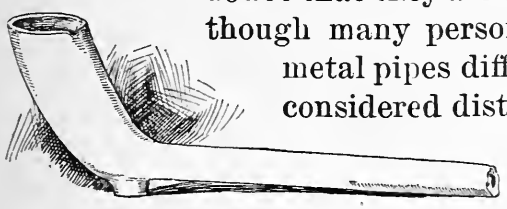

Fig. 75.
ENGLISH FORM OF TRADE PIPE.
London, England.
Cat. No. 129692, U.S.N.M. Collected by E. Lovett.

Fig. 74, here presented, was dug up in the environs of London, and is of a hard-burned white clay upon which the mold mark is quite distinct. Upon the upper outside rim of the bowl are seen a number of small dots in a row encircling the bowl, forming the mill mark. This circle of dots is found on the English molded pipes of the seventeenth century as well as on those of Dutch make. This bowl is quite small, holding less than one-half as much as fig. 75, also a pipe from ancient London. The cause of the reduction in the size of the bowl was probably owing to the restrictive legislation of the period of James I and the consequent enormously enhanced value of tobacco on account of its supposed wonderful medicinal virtues.

[1] Llewllynn Jewitt, Ceramic Art in Great Britain, I, p. 296, New York, 1878.
[2] Baron de Bonstetten, Recuiel d'Antiquités Suisses, Pt. 3, p. 13, Berne and Paris, 1855.

Fig. 76 is a molded pipe from Guda, Holland, collected by Mr. A. S. Gatschett, and has the same general style of bowl as the preceding English pipes, though in the latter the flat heel is observed instead of the spur. Upon the heel of this pipe are stamped five dots in a ring around a central dot. This variety is commonly described as one of the earliest English forms. Some attribute them even to the Elizabethan period.

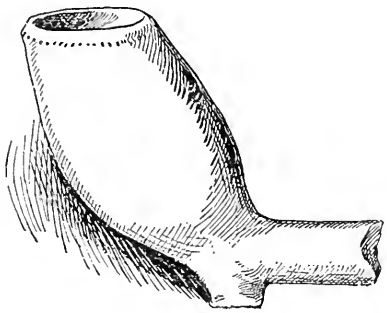

Fig. 76.
ENGLISH TYPE OF CLAY PIPE.
Guda, Holland.
Cat. No. 45959, U.S.N.M. Collected by A. S. Gatschett.

This stamp has been called by some writers a lily; by others it is described as a rose. So far, however, as the writer has been able to determine, it is extremely difficult to ascribe to these pipes any certain date, and there is doubt even whether the shape is not common alike to France, England, and Holland.

The trade marks and symbols on trade-pipe heels and bowls are too numerous to mention, though doubtless a study made of them would settle many vexed points in American archæology.

There is in the Douglass collection a pipe presented by Dr. Ferdinand Kellar, of Switzerland, and by him attributed to the sixteenth century, upon the side of the bowl of which are the same five dots in a circle referred to as being on the heel of the English pipe, and called a rose and also a lily, though the form of the pipe is more like those which in this paper are described as Iroquoian, the shape of which was mainly due to French influences. Upon one of the English pipes in the U. S. National Museum collection there appears the monogram HB on the heel.

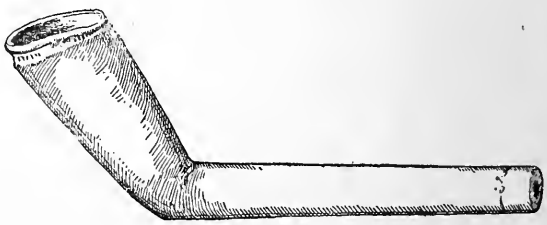

Fig. 77.
POTTERY TRADE PIPE.
Warren, Rhode Island.
Cat. No. 17974, U.S.N.M. Collected by J. H. Clark.

Fig. 78.
STEATITE TRADE PIPE.
Norfolk, Virginia.
Cat. No. 175595, U.S.N.M. Collected by J. D. McGuire.

Fig. 77 is quite an ancient English trade pipe, found in an Indian grave at Burs Hill, Warren, Rhode Island, and collected by Mr. J. H. Clark, upon which there is neither heel nor spur, though the mill mark around the outer side of the bowl is quite distinct. The texture of the pottery from which it is

made is much less hard than is usually the case with trade pipes, and it having no heel or spur may indicate that it was of a more primitive form than those having such.

Fig. 78 is a pipe in every way similar to the Rhode Island specimen, made, however, from dark green chlorite and well polished. It was given the writer some years since, and was said to be a surface find from near Norfolk, Virginia. The bowl and stem are as thin as are usually those of the molded trade type of burned clay, and it is a fine example of skill in stone work as well as an evidence of contemporaneous use of stone and clay pipes of similar form. Even though it were demonstrated that this pipe was made with steel tools, as it probably was, it would represent a piece of exceptionally good workmanship for a modern mechanic.

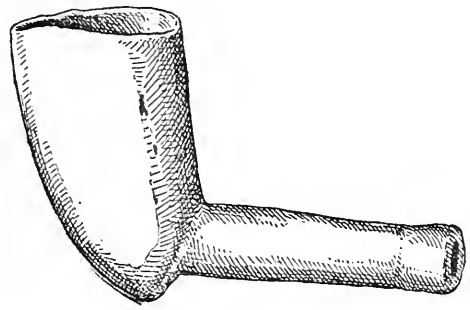

Fig. 79.
STONE PIPE.
Nacoochee, Georgia.
Cast, Cat. No. 31567, U.S.N.M. Collected by J. H. Nichols.

A cast of a stone pipe (fig. 79) found at Nacoochee, Georgia, collected by Mr. J. H. Nichols, is clearly of the type of the trade pipe. Its short stem and slightly enlarged mouthpiece, as well as the thinness of the bowl, would, however, appear to indicate a metal prototype and probable European origin.

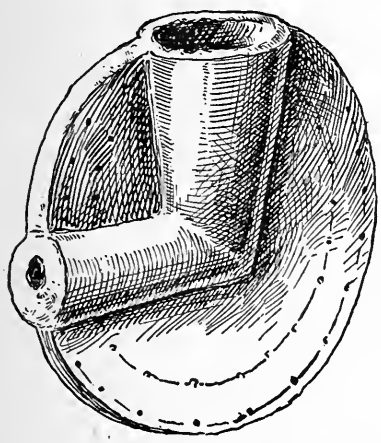

Fig. 80.
TYPE OF STONE TRADE PIPE.
Tioga, New York.
Cast, Cat. No. 58532, U.S.N.M. Collected by J. Allen.

Fig. 80 represents a cast of an extremely peculiar and unique specimen of the primitive trade pipe form, surrounded by a disk of stone evidently so carved and worked out of the stone as to resemble sewed leather. It is from Tioga County, New York, collected by Mr. J. Allen. While the dots encircling the pipe, representing the stitches of the needle, are upon the one side in two rows, there is but a single row on the opposite side; all are, however, connected by lines running from dot to dot, as though intended to indicate the thread. The pipe form and disk appear to suggest that it is made in imitation of a pipe in its leather case.

The next pipe (fig. 81), which also evidently belongs to the European type, is made from blue clay, and is said to be of the primitive Italian form. The bowl, at right angles to the stem, is very much larger than are any of the European pipes with which the writer is acquainted. It was found at Redbank, New Jersey, and collected by Mr. W. S. Vaux. The bowl rests upon three coils as a base, rudely ornamental, parallel

lines running closely up and down the same, beginning at the top of the coil and ending just below the upper edge of the rim. Pritchett, in Ye Smokiana, represents such a pipe as of Roman make of the date of 1669. Judging from the large size of this bowl, the type would probably be of a period when the price of tobacco was cheap, as was the case during the reign of Charles II. Pritchett appears to have copied his illustration from one of Benedetto Stella, which was published in Rome in 1669, and is by the latter referred to as of English make.

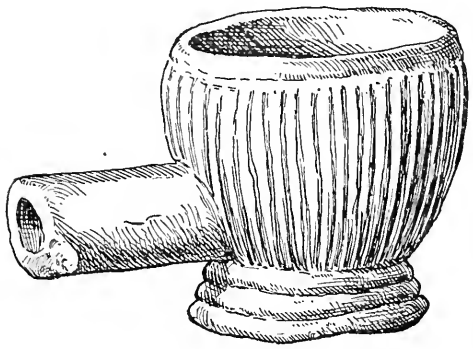

Fig. 81.
ITALIAN TYPE OF CLAY PIPE.
Red Bank, New Jersey.
Cat. No. 10032, U.S.N.M. Collected by W. S. Vaux.

As early as 1670 the Colony of Virginia shipped 12,000 hogsheads of tobacco, which was equal to 12,000,000 pounds.

Fig. 82 is a modern Dutch pipe made of the usual white clay, such as the ordinary clay pipe is commonly made from. It is figured solely for the purpose of illustrating the survival of primitive forms. The ornamentation is indicative of a close relationship to a class of pipes from Georgia herein referred to, and from this and other known specimens the deduction is quite natural that European traders in pipes usually catered in type and ornamentation to prevailing Indian forms, the ornamentation, with few exceptions, being due to European ideas. Pipes of this type were evidently intended to be smoked with hollow stems, probably made of reed. If the leaves surrounding the stem and radiating from the bird's beak and the beak itself are compared with those upon the pipes from the Etowah mound, and the mound pipes from Georgia, it will be admitted that they have a common origin, whether that be Dutch or Indian, and the mold mark on the Etowah specimen (fig. 238) suggests that it is European. Ornamentation very similar to the bird's beak appears to be employed in certain prettily modeled clay pipes found in Onondaga and Cayuga counties, New York, specimens of which are in the collection of the Peabody Academy of Sciences in Salem, Massachusetts; and an exceedingly fine specimen is also in the Douglass collection, the latter being about 7 inches long, and was found in Onondaga County, the beak arising 2½ inches above the bowl. It represents the head of a raven. The bird's mouth and nostrils are executed with unusual spirit, and appear to be due rather to French

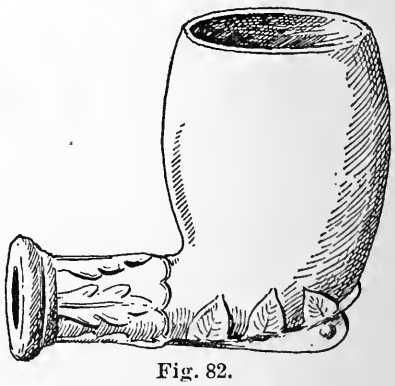

Fig. 82.
MODERN CLAY PIPE.
Holland.
Cat. No. 76856, U.S.N.M. Collected by U.S. State Department.

than Dutch or English influences. It may be argued that this resemblance between the pipes of the South and the North is due to accident rather than design, though the writer is convinced that in this case, as in most others of American pipes where artistic figures in the round are observed, the idea is European and due to European influences entirely.

The "trade pipe" goes by many names in different parts of the British possessions in Europe, "Danes pipes," "Cromwell pipes," "Elfin pipes," and "Celtic pipes" being among the most common. Wilson says that the pipes known by the last two names have been found in considerable numbers in North Berwick and elsewhere in Scotland.[1]

This pipe is quite common in many parts of Scotland. Some archæologists still contend that pipes of this type antedate the reign of Elizabeth, if not the discovery of America itself, a view in support of which there appears but little evidence.

One of the best known trade pipes was a London pipe which got its name from the "Old Cock Tavern." A rooster stamped on the heel identifies it.

The writer possesses a pipe of this type found in a shell heap on the shore of Chesapeake Bay, which has been so scraped over its entire surface so as to obliterate the mold mark. The attempt has been successful, except at one point on the heel, where a trace of it may still be seen. The stem of this specimen is only about 2 inches long and near the end is worn through on top by the smoker's teeth, which, if done by an Indian, must have been late in the seventeenth or early in the eighteenth century, for among primitive pipes there is seldom any evidence of the stem coming in contact with the teeth, and so marked is this that one is impressed with the belief that it must be due to some especial custom in connection with the pipe. A noticeable feature of this pipe is that the stem has been broken off close to the bowl and repaired with glue. This pipe was purchased of a lad who was smoking it at the time, and stated that he had found it less than half an hour before. As it was of undoubted trade form and the boy attached no value to it, there appears no reason to doubt the correctness of the story. That the pipe may, however, be that of a white man, as the wear of the stem would appear to indicate, must be admitted as a possibility, for Jewitt refers to "the bowls of many of the older pipes" which "are scraped into form after being molded."[2]

We can only surmise what the glue is with which this pipe has been repaired, as the only reference the writer recalls of aboriginal glue occurs in Smith's account of Virginia, in which he remarks that "with sinews and the tops of deers' horns boiled to a jelly they make a glue that will not dissolve in cold water."[3]

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[1] Daniel Wilson, Archæology and Prehistoric Annals of Scotland, p. 679, Edinburgh, 1851.

[2] Llewellynn Jewitt, Ceramic Art in Great Britain, I, p. 295, New York, 1878.

[3] Capt. John Smith in Virginia, p. 68, in Arber's edition of Smith's Works.

Whether the original trade pipe is a copy of an earlier stone pipe or not may be open to question, the writer being of the impression that it is a modification of the primitive tube. Mr. Newton D. Sprecher, however, found on the Upper Potomac River, near Shepherdstown, in Virginia, a very perfect specimen of a stone pipe of the "trade type," the stem of which is somewhat large in proportion to the size of the bowl. It appears to be made of banded slate.

While the Indian, we are told, would give anything in his possession for tobacco, and made many and sometimes singular uses of it, it remained for the whites to adopt it as currency. The first evidence of which that has come under the writer's notice is an enactment at James City, Virginia, in 1619, declaring tobacco a currency, the treasurer of the colony being directed to receive it at a valuation of 3 shillings a pound for the best and 18 pence a pound for the second quality.[1]

Governor Yeardley directed general attention to the culture of tobacco, the profits of which became so alluring that all other occupations were forsaken for it. In the colony of Virginia, with a population of 4,000 in 1620, 40 hogsheads of tobacco were shipped to England; in 1638, 500,000 pounds, and in 1670 it had increased to 12,000,000 pounds.[2]

During the reign of Elizabeth there was no especial reason for a small bowl to the pipe, except the natural scarcity of the tobacco supply, the duty on it being only 2 pence a pound. James I, however, raised it to the enormous sum of 6½ shillings a pound.[3]

From this time on for a long period the strongest efforts were made to suppress the use of tobacco. The same year (1620) that the colony of Virginia exported 40 hogsheads of tobacco King James I issued a proclamation for restraint of disorderly trading of tobacco. "Whereas," says the statute, "We, etc., out of the dislike we had to the use of tobacco, tending to a general and new corruption, both of men's bodies and manners, and yet, nevertheless, holding it of the two more tolerable that the same should be imported, amongst many other vanities and superfluities which came from beyond the seas, then permitted to be planted here within this realm, thereby to abuse and misemploy the soil of this fruitful Kingdom" * * * did prohibit, after the 2d day of February, (then) next "the sowing, setting, or planting of tobacco; and whereas we have taken into consideration the great waste and consumption of the wealth of our Kingdoms by the inordinate liberty and abuse of tobacco, being a weed of no necessary use, and but of late years brought into our dominions,"[4] it prohibits others than such as shall be authorized and appointed thereto by letters patent from having it in possession, etc.

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[1] Justin Winsor, Narrative and Critical History of America, III, p. 143.

[2] Idem, pp. 140, 146, 147.

[3] F. W. Fairholt, Tobacco and its Associations, p. 83.

[4] Robert Sanderson, Rymeri Fœdera, p. 233, London, 1726, quoting Eighteenth, James I.

Charles I, in 1625, issued a proclamation "De herba nicotiana," in which the following appears: "Whereas our most dear father did, 29th September last and the 2d of March last, publish two proclamations prohibiting the importation of tobacco not the growth of Virginia or the Sommer Islands," gives until the "fowerth daye" of May next to export any such as may be in the country.[1]

So drastic a measure as to require the exportation from England of tobacco not grown in the British possessions appears to have been the cause, in some way, of a proclamation issued the following year (1626) allowing the importation into England of 50,000 pounds of Spanish or foreign tobacco.[2]

When the demand for tobacco exceeded the supply, the natural law of trade immediately became in force, and the price increased in proportion. At one period it was related that the newest and least worn shillings were laid aside with which to purchase an equal weight of the *Herba nicotiana*.

In 1626, it is said, "Sir Henry Oglander, in the Isle of Wight, records for eight ounces of tobacco 5 shillings," and in the Journal of Rev. Giles Moore, in 1656, he notes "for two ounces of tobacco 1 shilling."[3] This enormous cost of tobacco would naturally have a tendency to reduce the pipe bowl to "elfin" dimensions.

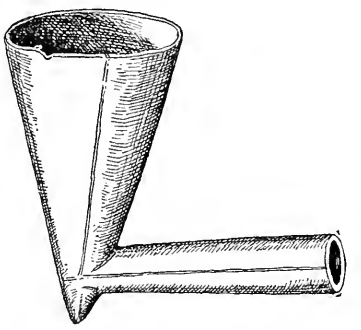

Fig. 83.
BRAZED IRON PIPE.
Cherokee County, North Carolina.
Cat. No. 12260, U.S.N.M. Collected by Gen. Thomas A. Duncan.

To what extent the colonists smoked in the earlier years we appear to have no record, but from certain remarks encountered in some colonial writings we can but infer that they indulged in smoking to a less extent than Englishmen did at home. The restrictive legislation of the mother country against smoking was also enacted in some of the colonies, and the writer is of the impression that the law against smoking in the public streets yet prevails upon the statute books, applying to Boston, Massachusetts, and survives from the laws of the seventeenth century. The tobacco pipe of the famous Miles Standish, who came over in the *Mayflower*, and which was smoked by him on the day of his death, is referred to as a little iron affair about the size and shape of a common clay pipe,[4] probably just such an iron pipe as is often found in European countries and commonly, but erroneously, the writer thinks, attributed to the Roman period.

A very primitive yet a substantial metal pipe (fig. 83) from Cherokee

[1] Robert Sanderson, Rymeri Fœdera, p. 19, quoting First Charles I.

[2] Idem, p. 849.

[3] F. W. Fairholt, Tobacco and its Associations, p. 104, London, 1859.

[4] Antiquity of the Tobacco Pipe in Europe, referring to the Albany Journal, American Antiquarian, II, p. 6.

County, North Carolina, collected by Gen. Thomas A. Duncan, is said to have been found in an old shaft supposed to have been one of the workings of De Soto in that State. The cone-shaped bowl is at right angles to its tubular stem, both bowl and stem being made of sheet wrought iron cut to the desired size, the edges of which when brought together have been neatly brazed, the brass line being well shown in the illustration. The writer would suspect a much more recent period than that of De Soto as the date of this pipe, and either French or English as its origin, probably the latter.

This view is greatly strenghtened by fig. 84, a steatite pipe from Westerly, Rhode Island, collected by Mr. J. H. Clark. The bowls of these two pipes, except in material, are identical, and the stone specimen leaves little doubt of its being a copy of a metal original. The walls of bowl and stem are approximately three-sixteenths of an inch thick, a glance at which suggests a metal rather than clay prototype.

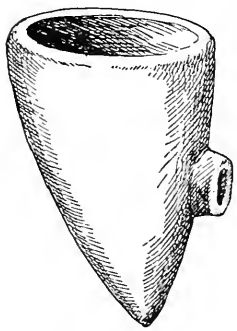

Fig. 84.
STONE PIPE.
Westerly, Rhode Island.
Cat. No. 17951, U.S.N.M. Collected by J. H. Clark.

A still more primitive metal pipe than any we have encountered is a specimen catalogued as from "Virginia," in the museum of the University of Pennsylvania, which is about 8 inches long, made from a thin sheet of copper, in shape somewhat like that of the trade pipe. The copper had first been cut to suit the purpose for which it was intended; the stem has been formed by hammering the edges into tubular shape and then made to overlap; the bowl, at right angles to the stem, has been hammered in the same way, the sheet forming it also overlapping, as did the stem. The only sign of ornament on this very primitive pipe is a narrow beading projecting around the upper edge of the bowl, hammered from the inside. The metal from which this pipe is made is neither welded, brazed, nor riveted, yet the overlapping metal forms a most satisfactory stem and bowl.

Still another metal pipe made of sheet copper was plowed up in a field at Mount Eaton, Stark County, Ohio, and is in the Douglass collection. It is of thin sheet, the bowl and stem both being brazed.

From the period of the first use of tobacco in Europe, so far as the writer has observed, the shape of the trade pipe has remained practically constant, the European having apparently adopted a pipe of a shape selected by the early traders with the Indians.

Among the American Indians there are known to have been many different plants smoked in pipes; and while the European appears to have been generally consistent in his employment of tobacco there were exceptions to the rule, a most peculiar one of which was that recorded of William Bredon, who in 1633 was the parson or vicar of Thornton, "who was so given to tobacco and drink that when he had no tobacco he would cut the bell ropes and smoke them."[1]

[1] F. W. Fairholt, Tobacco and its Associations, p. 107, quoting Lilly the astrologer.

The English were trading in axes, blue cloth and peake, jew's-harps, pipes, etc., according to the records of proceedings in the Council of Maryland in 1637, and had, presumably, done so in Virginia from an earlier period. Among articles seized under a sheriff's levy on the goods of Captain Cleyborne, June 20, 1638, are enumerated, "two trading pipes." Josselyn asserts that tobacco derives its name from Tabago, one of the "Caribbe Islands," and refers to its proper name as "picielte, as others will Petum; nicotian from Nicot, a Portugal," and quaintly refers to its being "made the complement of our entertainments and hath made more slaves than Mahomet."[1]

After the middle of the seventeenth century the English constantly refer to the pipe in trade with the Indians and in the presents given in treaties and councils. At first they are enumerated in small quantities, but soon are treated of by the gross. The colonists cultivated the tobacco plant, and early turned out by machinery pipes in which to smoke it, all which added to their trade and its consequent profits.

Among the articles enumerated which were given in exchange for land lying between Rankokas Creek and Timber Creek in New Jersey, on September 10, 1677, are 120 pipes and 100 jew's-harps.[2]

Five years later William Penn landed and received the lighted calumet or pipe, "which was smoked out of by all, the great sachem first taking a whiff, then William Penn, and subsequently the sachems and warriors and squaws of every tribe."[3] A second smoke closed the bargain for the purchase of the land; and 300 tobacco pipes, 100 hands of tobacco, 20 tobacco boxes, and 100 jew's-harps were a portion of the articles given in the exchange.

Garcillasso de la Vega, in his Royal Commentaries of Peru, 1688, gives so little information concerning tobacco beyond mentioning its name, "sayri," as to leave one under the impression that it was not smoked by the natives; it was, however, used as snuff.

In the "Counterblaste" of King James I, tobacco is spoken of as "loathsome to the eye, hurtful to the nose, harmful to the brain, dangerous to the lungs, and in the black stinking fume thereof nearest resembling the horrible stygian smoke of the pit that is bottomless."[4]

English pipes presented to the Indians in 1692 were of wood and tin, others were referred to as "wampum pipes," and others as of "white clay."[5]

In the negotiations in 1702 by Lord Combary, captain-general and governor in chief "to ye farr Indians called 'Twightwighs' (Miamis)

[1] Collections of the Massachusetts Historical Society, 3d ser., p. 261, Josselyn's account of Two Voyages to New England.

[2] Samuel Smith, History of the Colony of Nova Caesaria, or New Jersey, Burlington, New Jersey, 1765.

[3] M. L. Weems, The Life of William Penn, Philadelphia, 1836.

[4] R. A. Brock, The position tobacco has ever held as the chief source of wealth to Virginia, p. 11, Richmond, Virginia.

[5] W. M. Beauchamp, Indian Pipes, American Antiquarian, IV, p. 329.

and 'Dionondades'" (Wyandots and Nation de Petun), among the presents to the Indians "one hundred and ten wampum pipes"[1] are mentioned, referring probably to the hard-burned trade pipes.

Labat, in 1724, says tobacco was like an apple of discord which lighted up a lively war among the learned, in the discussions concerning which the ignorant took an equal part; even the women were not backward in arraying themselves for or against a thing they understood no more than they did the serious problems of their times. Doctors, he says, took advantage of the occasion, though they had never before seen or heard of tobacco, and did not hesitate to discuss its virtues as though they had known it since the time of Galen, Hippocrates, and Esculapius. Reasoning without knowledge, they seldom agreed; some tempered it with cooling drugs, others mixed it with aromatic herbs, but all concurred in prescribing it with directions how to prepare and take it according to age, strength, and temperament. They prescribed the exact quantity to be taken, and at what time; one was to take it fasting and another only after a meal; one in the evening and the other in the morning, etc.[2]

The natives of the Hudson Bay country received from the English traders "medicines" analogous to the tobacco of America, according to Ellis, in 1750, who says: "There are many, especially those living on the cliffs of the Great Lakes in the interior of the country, who act the rôle of charlatans, with drugs they buy of the English—sugar, ginger, barley, pepper, the seeds of kitchen plants, Spanish liquorice, powdered tobacco, etc. The Indians take all these drugs in small quantities, either as remedies, or that they may excel in hunting, fishing, or in fighting; qualities attributed to these trifles by the Hudson Bay English. It is by these means that a third of the trade is made with these charlatans who exchange them for furs which the common people give them or which they trap."[3] De Paw says: "Sarmiento in going for reenforcements for his settlements was made prisoner by this celebrated Raleigh, who on his part had sought El Dorado, and who was afterwards beheaded at London for having taught the English to smoke, at least the judges alleged this pretext to immolate a great man whom they disliked. If it is true that England gains annually twenty millions from this American plant it is surprising that Raleigh has not yet a statue."[4]

At Damariscotta River, Moscongas Sound, Maine, Mr. Phelps has repeatedly found iron implements and clay pipes of European make in the upper layers of the great shell heap, but in no case have these things been found below 1 foot from the surface.[5]

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[1] Documents relating to the Colonial History of New York, IV, p. 981.

[2] Labat, Voyages aux isles de l'Amerique, IV, p. 479, Hague, 1724.

[3] Henry Ellis, Voyage à La Baye de Hudson, p. 246, Leyden, 1750.

[4] Cornelius De Paw, Recherches Philosophiques sur les Américains, I, p. 364, London, 1771.

[5] F. W. Putnam, Sixteenth and Seventeenth Annual Report of the Peabody Museum of Archæology and Ethnology, pp. 161, 353.

There is in the collection of the U. S. National Museum (Cat. No. 6182) a fragment of a pipe made of blue clay which was found at Bloomfield, Onondaga County, New York, collected by Col. E. Jewett. It is poorly burned, yet quite artistic in design, the attempt having apparently been made to imitate an ear of corn on the panels surrounding the bowl. That its origin is due to the white people is further shown by a stamp of a notched arrow fitted into the string of a bow, which is drawn back to its head, this is placed inside a diamond-shaped figure. The specimen apparently belonged to a pipe of the type of the Roman specimen found at Red Bank, New Jersey. The Rev. W. M. Beauchamp refers in a private letter to a pewter pipe found in Oneida County, New York, of the "trade pipe" form, and speaks of others of brass and iron. Dr. E. A. Barber also refers to a pipe of the "trade pipe" pattern which was found in the Jura Mountains, Canton of Berne, Switzerland, made of iron, having upon its bowl the face of a man facing the smoker, and a second face on the far side facing in the opposite direction, and a second specimen, on the bowl of which there is represented the leaf of some plant, probably a tobacco leaf.

In a communication to the Daily Post of Birmingham, England, by Mr. Este, he refers to "pipes of Sevres, of Saxe, and Berlin; Capo di Monte and Furstenburg, Copenhagen; English pottery, Worcester glazed pipes of Brompton ware and Wedgewood; Italian pipes of delicate ivory and choicest Venetian glass; German pipes of agate and meerschaum; Swedish pipes of iron from Danemora, and Roman pipes from the Campagna," as among the celebrated pipes of the world.[1]

These and those of many other countries were among the pipes in the wonderful Bragge collection now in the British Museum. On the Indian town sites of the Colonial period fragments of many of these pipes at times occur, especially those of the Spanish, French, Dutch, English, and Italian types. Among the French pipes of the beginning of this century Fairholt figures one, part of the stem of which consists of a cannon having upon the barrel two bowls, one behind the other, in shape of bombshells. The idea is identical with the double-bowled Siouan callinite pipe herein figured[2] (fig. 176).

A similar specimen has been found in a mound in Michigan. There are doubtless those who will consider the latter type purely aboriginal, though the writer can not help thinking that the form is due to the influence of European art. The same may be said of the death's-head pipe, not uncommon on the continent of Europe, which has characteristics similar to those of certain pipes of the Iroquoian type found along the St. Lawrence, in northern New York. An inquiry among distinguished archæologists of France, Italy, and Holland as to the primitive forms of pipes of those countries has had only negative results. Ancient stone pipes appear scarcely ever in Europe, the only one coming under the writer's notice being referred to by Wilson as coming from

[1] The Pipes of All People, Birmingham Daily Post, December 16, 1870.

[2] F. W. Fairholt, Tobacco and its Associations, p. 188, London, 1859.

the village of Morningside, at the base of the Pentland Hills, in Scotland, where numerous traces of primitive population have been brought to light.[1]

Dr. E. A. Barber refers to a pipe of Etruscan origin, having a beautiful patina, in the Campagna collection, which presents some characteristics of originality, yet Rev. W. M. Beauchamp refers to a specimen of quite similar type in his collection at Tompkinsville, New York which was found on the shore of the Susquehanna River.

It is to be regretted that the history of the tomahawk pipe is so incomplete in early American writings, for it certainly has occupied as important a place, both in war and peace, over a great part of the continent as any pipe known, and is peculiarly a war pipe and one of the most familiar and terrible weapons of the allies of the whites in the endless colonial wars of America. According to Strachey the native term for "hatchet" was "taccahacan," or "tamahaac," as distinguished from an Indian hatchet, which was "cunsenagwas."[2]

This word eventually came to designate the "war hatchet" of the Indian, supplied by the military commanders of the whole continent in equipping the warriors on the many expeditions in which French and English were constantly engaged, and was furnished the Indian allies of the English in our war of Independence. This weapon was either in the form of a spear or hatchet blade on one side, while upon the opposite side there was a cup-like cavity with a small hole extending into the eye of the weapon into which a tough handle of wood was fitted, 18 inches or 2 feet in length. The handle was perforated almost its entire length, and below the hollow of the bowl it was bored at right angles to this perforation, a suitable stem hole for the passage of the tobacco smoke when the implement was in use as a pipe. The tomahawk pipe was not only attractive and popular in trade, but, like the earlier trade pipe, was given as a present at councils and ratifications of treaties; it was a pipe, a hatchet, and a mace or hammer all in one, and answered an important military requirement in lessening the weight and incumbrances of the warrior, who otherwise would have tenaciously held to the stone pipe, which, in itself, was heavier than the tomahawk. French, English, and Spanish all appear to have made and distributed the metal tomahawk. Usually it was of iron, but examples are known of copper, of brass, and of pewter. Some were made of a combination of brass and iron, intended for ornamentation rather than to add to its effectiveness. At times the blades were inlaid with silver in ornamental designs. The outline of the bladed tomahawk of metal is so similar to the stone hammer-ax or Thor-hammer of antiquity as to suggest that the one was copied from the other. The handles of these tomahawks were from an inch to 1½ inches in diameter, the stems of them when not bored were split open,

[1] Daniel Wilson, Archæology and Annals of Scotland, p. 681, Edinburgh, 1851.

[2] William Strachey, Historie of Travaille into Virginia, 1612 (Hakluyt Society).

and, having a groove gouged in each piece, they would be again placed together and held in place with glue, or bound with wire or hide. The ornamentation of pipe stems depended largely upon the owner's taste, they being decorated in the most attractive manner; sometimes the ornamentation would be of feathers, of strips of skins of various animals, or they would be studded with brass or silver nails, and scores or tallies were often kept by notches, representing the enemies killed or struck with the weapon. The writer recalls a Creek tomahawk hatchet pipe upon the handle of which were several groups of score marks said to represent the victims of its owner's prowess, the different scores indicating distinct tribes with which the owner had fought.

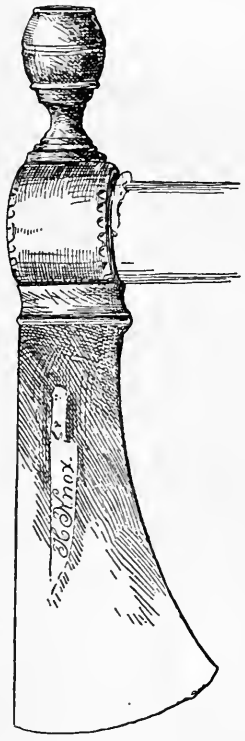

Fig. 85.
ENGLISH TYPE OF TOMAHAWK PIPE.
Cat. No. 3233, U.S.N.M.

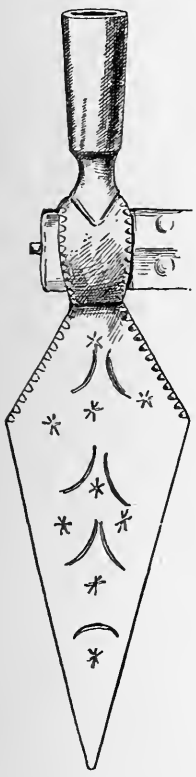

Fig. 86.
TOMAHAWK PIPE.
Devils Lake, Dakota.
Cat. No. 23728, U.S.N.M.
Collected by Paul Beckwith.

Fig. 85 is one of the most graceful and at the same time most symmetrical of the familiar forms of the English tomahawk pipes. Its long graceful hatchet blade is made of iron, into the blade of which is inlaid an ornamented silver plate in the form of the now familiar Bowie knife, upon the blade of which is neatly engraved "H. Knox," as though a play upon words were intended. The handle of this pipe-hatchet has wound around it a band of silver, and a number of silver nails driven into the wood. This tomahawk is 8 inches from edge of the blade to the top of its bowl. There is in the U. S. National Museum collection a similarly shaped specimen from Cattaraugus County, New York, with a blade of brass into which is brazed a steel cutting-edge. On these tomahawks the bowls are similar, shaped like an inverted acorn, having the general characteristics of the Micmac stone pipe. There is in the collection of the U. S. National Museum another tomahawk-shaped pipe of wood, of Cherokee make, the bowl and eye of which are, however, reenforced by a lining of sheet iron. The earliest description the writer has found to tomahawks is that of Robert Rogers, who, in 1765, says: "This weapon," the tomahawk, "is formed much like an hatchet, having a long stem or handle; the head is a round ball of solid wood, well enough calculated to knock men's brains out, which on the other side of the stem terminates in a point where the edge would be if made an hatchet, which point is set a little hooking or coming towards

the stem; and near the center where the stem or handle pierces the head another point projects forward a considerable length, which serves to thrust with, like a spear or pike pole. The tomahawk is likewise ornamented with feathers and paintings disposed and variegated in many forms, according to the occasion and end for which it is used, and on it they keep journals of their marches and most important and noted occurrences in a kind of hieroglyphs."[1]

The description of Rogers would therefore indicate that the tomahawk pipe was not in general use ten years prior to the Revolution but about contemporaneous with the war of the Revolution.

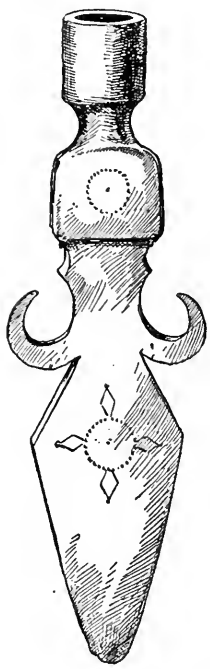

Fig. 87.
FRENCH TYPE OF TOMAHAWK PIPE.
Kiowa Indians.
Cat. No. 153013, U.S.N.M.
Collected by James Mooney.

Fig. 86, from Minniwaukan or Devils Lake, Dakota, collected by Maj. Paul Beckwith, United States Indian Agent, presents the tomahawk pipe with the spear-shaped blade. The ornamentation of this blade is quite gracefully arranged by incisions in the metal in conventional star and crescent-like figures and notches on the upper angles of the spear and around the edges of the eye. The bowl, while longer, is less ornamental than that of the preceding figure. This type is commonly attributed to the French, but with little apparent authority, though the presumption may well be correct, for we know that pipes, from their shape and ornamentation, were attributable to their proper tribe, and it is most natural that English and French should have armed their allies in such a manner as to render them easily distinguishable from their enemies. Had the tomahawk pipe been employed in Rogers's time he would scarcely have failed to notice it, one would think, though, Col. A. Lane Fox, quoted by Stevens, says, that "during the American war the English were compelled to make iron tomahawks after the native pattern with a pipe bowl opposite the blade of the weapon, before the Indians could be efficiently armed as allies."[2] This would probably identify sufficiently the time when these weapons came into general use as about the beginning of the Revolution. They have been referred to as instruments "resembling a little axe with which the Indians crush the heads of their enemies, which they smoke, and on the handle of which they keep a register of their victories."[3]

Closely allied to the last specimen is one (fig. 87) collected among the Kiowa by Mr. James Mooney. Though the head is only $6\frac{3}{4}$ inches long,

[1] Robert Rogers, A Concise Account of North America, p. 226, London, 1722.

[2] Edward T. Stevens, Flint Chips, p. 526, London, 1870, quoting Col. A. Lane Fox. Primitive Warfare, Journal of the Royal United Service Institute, XI, p. 617.

[3] John Filson, Histoire de Kentucke, nouvelle Colonie à l'Ouest de la Virginie, p. 97, note, Paris, 1785, translated from English by M. Parrand.

the handle of it is 20 inches long. Mr. Mooney, who has passed much time among the natives of the Southwestern portion of the United States, attributes this specimen to the Mexican or Spanish type; a somewhat similar specimen (Cat. No. 8363, U.S.N.M.), collected among the Apaches, would appear to sustain this opinion, the pipe figured retaining very greatly the pike or halberd shape which was in use in the eighteenth century.

The form of the old metal battle axe is preserved in fig. 88, which is an iron tomahawk, found in Greenbrier County, West Virginia, by Mr. W. R. Stewart. The axe is 7 inches long, its blade being perforated with three holes for the purpose of allowing the attachment of cloth or feather ornaments; brass disks, slightly convex, are brazed to the blade to heighten the effect from an esthetic point of view. This curved blade may be seen in many weapons in the collection of the U. S. National Museum recently brought from the Kongo, as well as in the battle-axe of the time of the Crusades.

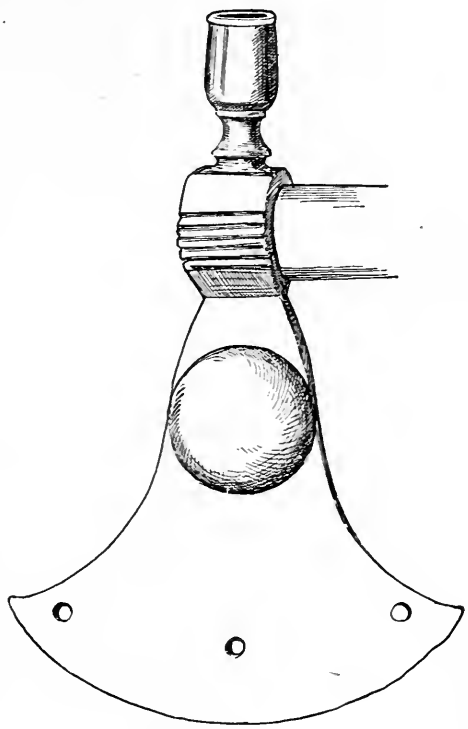

Fig. 88.

SPANISH TYPE OF TOMAHAWK PIPE.

Greenbrier County, West Virginia.

Cat. No. 13515, U.S.N.M. Collected by W. R. Stewart.

There is in the collection of the Museum of the University of Pennsylvania an excellent bronze tomahawk pipe from Pasadena, California, the exterior of which, blade, bowl, and eye, are all covered with series of short straight and curved lines arranged in tasteful designs.

In the Siouan area, near the waters of the Upper Missouri, tomahawks in imitation of those made of metal are found made of catlinite.

Pipes of this character, owing to the Indians being moved on to reservations from their original homes, are liable to be found far from their original point of distribution, and while the same argument would apply to pipes of other shapes it would be to a far less extent for many reasons, chief of which would be that the earlier Indians were confined within more restricted limits.

There was, there can be little doubt, a more intimate acquaintance of the whites with the interior of the continent, through the wanderings of hunters and traders, than is generally believed. That the goods of the whites were traded from tribe to tribe before the whites themselves penetrated the country is recorded. James McBride, according to Filson, was the first white man who had knowledge of Kentucky, and, in 1754, "accompanied by some friends, descended the Ohio in

canoes, disembarked at the mouth of the Kentucky, and marked three trees with the first letters of his name."[1]

Du Pratz, however, it should be remembered, in 1758, only four years subsequent to this supposed visit, published a map of parts of the interior of the continent, upon which the Miami and the Maumee, the latter under the name of the Riviere du Portage, are both laid down.[2]

It is known that not only did the individual trader or trapper try to keep his rivals in ignorance of the territories which he visited, but the matter was an international one as well, for Spanish, French, English, and Dutch each tried to deceive those of other nationalities concerning the interior or back country, the struggle then, as in some countries even now, being to obtain or retain exclusive trade privileges. We see the same struggle to-day in Africa between the French and English which two hundred years ago was carried on in America.

In 1778 Daniel Boone was taken prisoner by 200 Indians and two Frenchmen, who carried him to the salt mines, where he found 27 more of his party, whom he regularly surrendered. "The advantageous conditions of his surrender," he says, "they observed strictly."[3]

MONITOR PIPES.

There is no pipe more striking or better marked in its characteristics than the "Monitor," which is widely distributed in the eastern United States, it being often found in mounds and other primitive burial places. This pipe is constantly encountered and has upon its surface the distinct striæ of the steel tools with which it was made, leaving little doubt that it was a common form after the advent of the whites. The delicacy of its finish as well as of its outline is surpassed by no American pipe, though this type does not appear to be found having upon it representations of animal life in any form, rarely ornamentation of any sort. The material from which they were usually, though not invariably, made is a chlorite or steatite and sometimes serpentine, though rarely the latter, and specimens having certain of the characteristics of this type are known which are made of pottery. They vary in color from nearly white to jet black, being usually highly polished and have remarkably thin bowls.

Adair, in 1775, refers possibly to a pipe of this character. He says: "The Indians make beautiful stone pipes, and the Cherokees the best of any of the Indians, for their mountainous country contains many sorts and colors of soil proper for such uses. They easily form them with their tomahawks, and afterwards finish them in any desired form with their knives; the pipes being of a very soft quality until they are smoked with and used to the fire when they become quite hard. They

[1] John Filson, Histoire de Kentucke, nouvelle Colonie à l'Ouest de la Virginie, I, translated from English by M. Parrand, Paris, 1785.

[2] Le Page Du Pratz, Histoire de la Louisianne, map opposite p. 138, Paris, 1758.

[3] Histoire de Kentucke, pp. 75, 76, Paris, 1785.

are often fully a span long, and the bowls are about half as large again as our English pipes. The fore part of each commonly runs out with a peak two or three fingers broad and a quarter of an inch thick on both sides of the bowl; lengthwise they cut several pictures with a great deal of skill and labor, such as a buffalo and a panther on opposite sides of the bowl, a rabbit and a fox. The savages work so slow that one of their artists is two months at a pipe with his knife before he finishes it; indeed, as before observed, they are great enemies of profuse sweating and are never in a hurry about a good thing. The stems are commonly made of soft wood, about 2 feet long and an inch thick, cut into four squares each, scooped till they join very near the hollow of the stem; the beaux always hollow the squares except a little at each corner to hold them together, to which they fasten a parcel of bell buttons, different sorts of fine feathers, and several small battered pieces of copper kettles, hammered, round deerskin thongs, and a red painted scalp. They so accurately paint hieroglyphic characters on the stem that all the war actions and the tribe of the owner and a great many circumstances of things are fully delineated."[1]

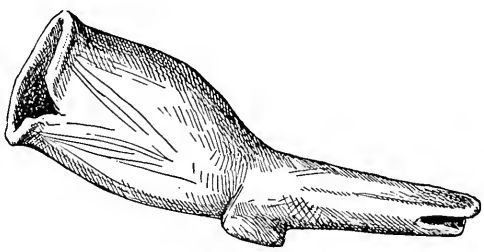

Fig. 89.
MONITOR PIPE.
Milford, Massachusetts.
Cat. No. 17946, U.S.N.M. Collected by J. H. Clark.

The monitor pipe is one upon which more care has been expended in boring its bowl and stem and in grinding and polishing the surface than any other type of pipe on the continent, not excepting the famous mound pipes. They vary in length from 3 to 18 inches with bases from 1 to 4 inches wide, the bowls varying from 1 to 8 inches in depth with a diameter of from three-fourths of an inch to $1\frac{3}{4}$ inches, usually cylindrical, though at times distinctly elliptical; they appear to have been smoked without separate stem. The stem holes seldom exceed one-eighth of an inch in diameter and are bored with remarkable accuracy, the variation of the size of the stem hole from end to end being scarcely appreciable. This remarkable accuracy of boring in stone where the walls of the tubes and bowls are commonly not in excess of one-eighth of an inch thick is almost proof positive that the drilling was done with steel tools.

The most primitive specimen of the monitor type (fig. 89) is from Milford, Massachusetts, collected by Mr. J. H. Clark. It has a bowl of oblong cross section, at the base of which is a slight heel, suggestive of the primitive European pipe; the cross section of the stem is a flattened ellipsoid, but slightly out of the plane of the bowl. This bowl is rudely scratched, as is the stem, the striæ crossing and recrossing over the

[1] History of the North American Indians, particularly those natives adjoining the Mississippi, east and west Florida, Georgia, North and South Carolina, and Virginia, p. 423, London, 1775.

whole surface. Stems of this type usually project beyond the bowl and broaden out on each side of it to a greater or less distance. The outline of these pipes is at times strikingly similar to the form of the monitor vessel of the civil war. On the upper side of the stem of a pipe of this character in the collection of the U. S. National Museum from Chester County, South Carolina, occurs three straight lines cut through the

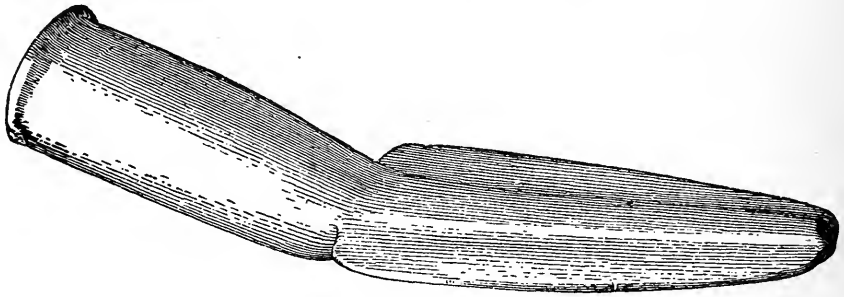

Fig. 90.
MONITOR PIPE.
Sullivan County, Tennessee.
Cat. No. 82390, U.S.N.M. Collected by J. W. Powell.

surface in the form of a parallelogram open on the side next the mouthpiece. A pipe of this type was also found on York River, Virginia, and is in the collection of Col. William H. Love, of Baltimore, Maryland.

A very similar specimen about 7 inches long, but without the heel, is here given, after Mr. Gerard Fowke (fig. 90), collected by Maj. J. W. Powell in Sullivan County, Tennessee. It was found in a burial mound and is of black chlorite. It has an alate stem, so common in pipes of this character. The largest specimen of this type so far encountered is probably a "Great pipe," having a bowl 8 inches long, being upward of 17 inches in total length, which was found in a mound in Marion County, Kentucky, collected by Mr. William T. Knott. This pipe is finished so delicately and carefully that over its whole surface there does not remain a single mark from the tools with which it was made. The smoothness of the surface is such and the bowl and stem are so thin that it would require unusual care to duplicate it with any tools with which it may have been made. In pipes of this type there is almost invariably a pronounced ridge running the length of the center of the stem, and so marked is this as to suggest a ductile prototype, either of pottery or metal.

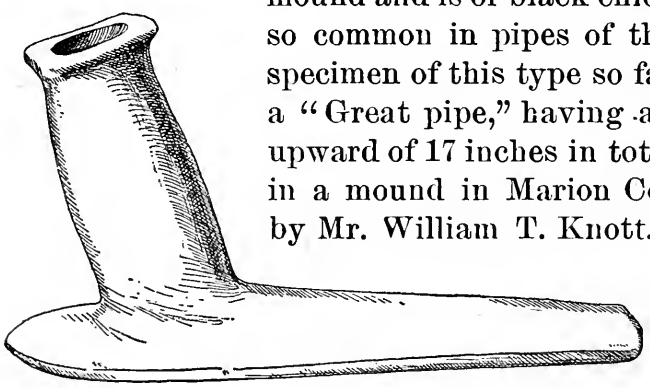

Fig. 91.
MONITOR PIPE.
Caldwell County, North Carolina.
Cat. No. 83037, U.S.N.M. Collected by J. P. Rogan.

Fig. 91 is a pipe from Caldwell County, North Carolina, collected by

Mr. J. P. Rogan. It is of chlorite, and has an extreme length of 5 inches, with a width of stem of 1½ inches. The flaring top, and the bowl, which approaches the rectangular, indicate no other than most primitive tools in working the surface, though even here there can be little doubt that metal was employed in boring both the bowl and the stem. The flaring top commonly noticeable in pipes of this type does not appear to have reached its limit except in those specimens where bowl and stem are at right angles to each other.

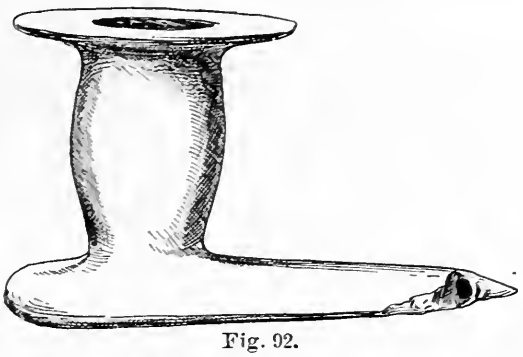

Fig. 92.

FLAT-BASE MONITOR PIPE.

Cumberland County, Tennessee.

Cat. No. 20130, U.S.N.M. Collected by S. D. Hoskins.

A very dark, almost black, "monitor" (fig. 92) is from Cumberland County, Tennessee, collected by Mr. S. D. Hoskins. It has a flat base 3 inches wide, though its height is little over 2½ inches. The stem at its thickest is slightly more than one-fourth of an inch, while the barrel-shaped bowl, with its wide and thin flaring top, have all been highly polished. The bowl cavity has been enlarged by gouging.

Professor Haldeman possesses a somewhat similar specimen, though without the enlargement of the rim of the bowl, from York County, Pennsylvania, which is well polished and made from a green stone.

A brownish steatite from Michigan, collected by Mr. D. S. Carvin, in shape almost identical with the last specimen (fig. 93), was found in a mound in Kanawha County, West Virginia, with a number of copper bracelets and objects of stone. Under the flaring top of this specimen are the file marks, too distinct to leave any doubt that it was with such a tool that they were made. They radiate from the inner to the outer rim, in series of parallel straight lines, and are equally distinct at the base of the bowl.

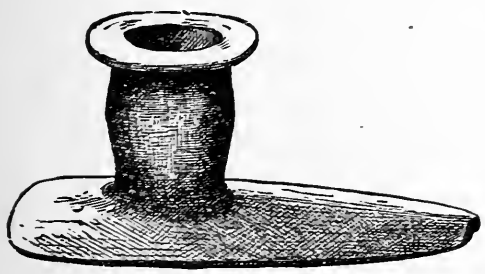

Fig. 93.

MONITOR PIPE.

Kanawha County, West Virginia.

U. S. National Museum. Collected by D. S. Carvin.

The most pronounced and typical "monitor" pipe is fig. 94, from Knox County, Tennessee, collected by Mr. J. W. Emmert. The projection of the base is as pronounced in front of the bowl as it is at the stem end. The barrel shape of this bowl has great similarity to certain of the urn-shaped bowl pipes. In this, as in the last specimen, the file marks are observed at the exterior base of the bowl where it joins the stem. They also appear under the flaring top of the bowl with great distinctness. This pipe is made of a light gray chlorite, and is, as a mechanical production, quite a marvelous piece of work.

Fig. 95 is a brownish gray specimen made of oolitic limestone, and was found in a mound near the ancient city of Kanahwa, West Virginia. It was collected by Mr. J. W. Norris, and is 5 inches long, with a greatest width of base of $1\frac{1}{4}$ inches, and on this pipe again are seen the file marks at one point, under the flaring top of the bowl, though they are not so pronounced as they are on many other specimens.

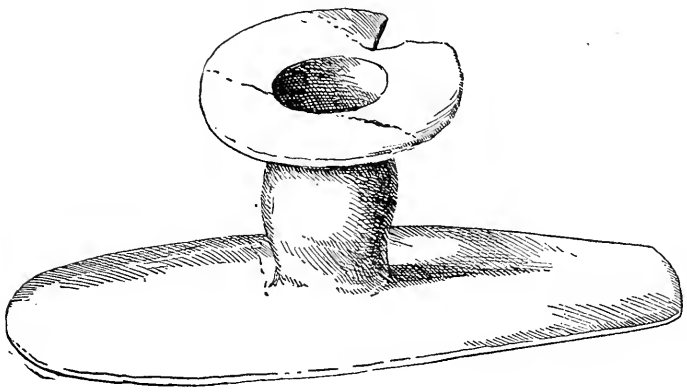

Fig. 94.
BROAD-BASED MONITOR PIPE.
Knox County, Tennessee.
Cat. No. 135089, U.S.N.M. Collected by J. W. Emmert.

A pipe having a stem peculiarly of this type, as well as a bowl of the monitor shape, is fig. 96, from Loudon County, Tennessee. It has no flat prow extending in front of the bowl, but there is at its base, on the side toward the smoker, a triangular depression, cut in intaglio and polished, that is convincing that the specimen was made by a person familiar with a metal pipe of similar shape, and if anything were necessary to strengthen this belief it is presented in the gracefully curved upper rim of the bowl. The file marks on this specimen again leave no doubt of European contact with the persons who used them. There is yet another pipe in the U. S. National Museum collection (Cat. No. 135081) from Knox County, Kentucky, of similar type to the last figure, but upon which the depression is absent, as are the file marks, though the material of both pipes is the same.

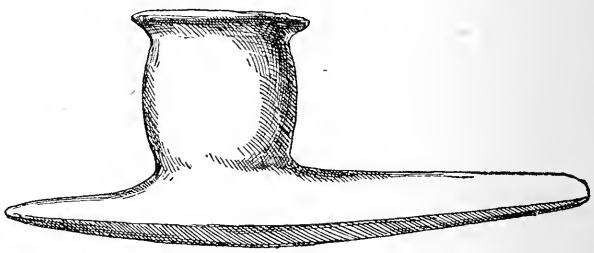

Fig. 95.
CURVED-BASE MONITOR PIPE.
Kanawha County, West Virginia.
Cat. No. 90840, U.S.N.M. Collected by J. W. Norris.

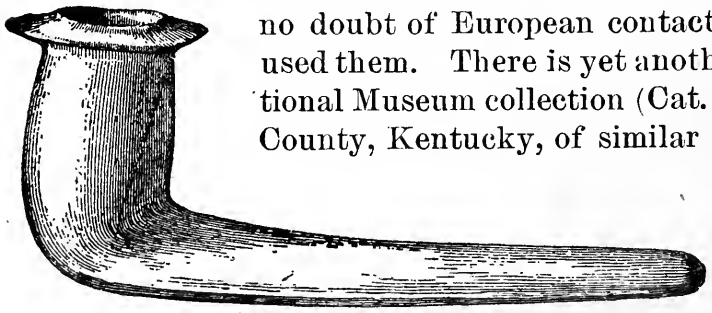

Fig. 96.
CURVED-BASE MONITOR PIPE.
Loudon County, Tennessee.
Cat. No. 116048, U.S.N.M. Collected by J. W. Emmert.

A pottery pipe of clay mixed with mica. Belonging apparently to this type is fig. 97, collected by Dr. J. D. Irwin, United States Army, at Fort Wayne, Wayne County, Michigan. It is scarcely $2\frac{1}{2}$ inches long, has many of the characteristics of the "monitor," especially in its stem

with flat base and in the projection in front of the bowl. Just below the rim is a depression encircling the bowl as though caused by a cord tied around it while in a plastic condition prior to burning.

A light gray serpentine pipe (fig. 98), collected from Ross County, Ohio, by Mr. H. L. Reynolds, is somewhat of the same type as the preceding, though there is a notable difference in the size of the stem hole, which is here five-eighths of an inch in diameter in place of one-eighth of an inch, as is usual in pipes of the monitor type. It should be stated that in referring to the material from which pipes are made the writer has in most cases been obliged to form his opinion from surface indications, as specimens would be injured by a chemical or microscopic examination, the results of which at best could make little difference. While the majority of pipes are made of materials well calculated to resist heat, many are composed of stones easily decomposed and very unsuited to last any length of time if used in smoking.

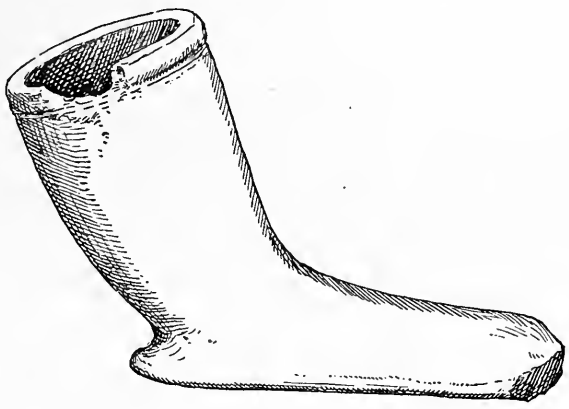

Fig. 97.
POTTERY MONITOR PIPE.
Fort Wayne, Michigan.
Cat. No. 10050, U.S.N.M. Collected by J. D. Irwin, U. S. A.

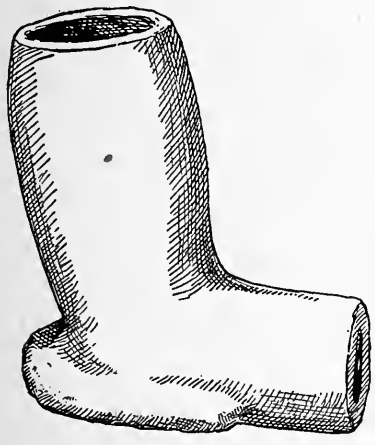

Fig. 98.
TYPE OF MONITOR PIPE.
Ross County, Ohio.
Cat. No. 134723, U.S.N.M. Collected by H. L. Reynolds.

A broken-stemmed pipe (fig. 99), of oolitic limestone, with its flaring rim, the shape of its stem and slight prow and sides extending beyond the base of the bowl, appears to connect the two last figures with pipes of the "monitor" type. There are no marks of metal tools on this pipe, which is a well-worn specimen, the bowl at one point, just below the rim, being worn through. A pottery pipe similar to this specimen was found in a stone grave in Kentucky. It should be observed that the three pipes last figured are from geographical areas outside of the territory where the monitor pipes are usually found, and their resemblance to the latter form may be due to accident. The country adjoining the lakes was more influenced by French than by English arts, and it may also be said that trade routes differed as well.

One of the most striking things concerning the monitor pipes, with their alate wings and projecting prow, is the high state of polish to

which their surfaces have been brought. There are a sufficient number of pipes of this class in the museums of the country to demonstrate the kinship of those in which the bowl and stem are in the same plane with those in which the bowl is at right angles to the stem.

These pipes are represented in the U. S. National Museum in specimens from Vermont, New Hampshire, Massachusetts, Rhode Island, North and South Carolina, Tennessee, Kentucky, West Virginia, and, as noted, possibly from Michigan, Ohio, and Wisconsin. Their characteristics are usually as pronounced as are those of the English trade pipe type. As the angle of the stem and bowl of this pipe, in its evolution or variation, departs from the straight line or tubular form and approaches a right angle to the stem it is noted that the prow increases in length until it becomes as long as its stem, and the sides of the bowl's base broaden to a corresponding degree. They are so often found in mound burials as to entitle them to be classed among the mound types; and, indeed, the typical mound pipe has much in its form to suggest a kinship with the monitor pipe.

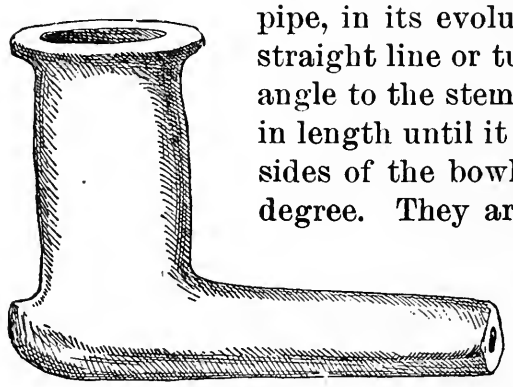

Fig. 99.

TYPE OF MONITOR PIPE.

Kanawha, West Virginia.

Cat. No. 90668, U.S.N.M. Collected by P. W. Norris.

There is a pronounced monitor pipe in the Peabody Academy of Sciences in Salem, Massachusetts, catalogued as from Maryland—a State that is distinctly within the area of the monitor form—a more particular history of which could not be obtained.

Prof. F. W. Putnam refers to a pipe of this type found in a grave in Massachusetts, and says the flat portion of the specimen is bored with a number of holes for the attachment of ornaments.[1]

The same type, according to Mr. Harry Piers, has been found in Halifax County, Nova Scotia.[2]

Prof. G. H. Perkins refers to it in the Champlain Valley, Vermont.[3]

The Peabody Academy of Sciences owns several found in Beverly, Massachusetts, and they have been found in New York, in Oneida, Onondaga, and Cayuga counties.[4]

RECTANGULAR PIPES.

There is a pipe of a distinct type, examples of which are found from Pennsylvania to Nova Scotia and as far west as Ohio, which by many are supposed to be specimens of aboriginal work, though to the writer they appear to be made with white men's implements. Those which

[1] Bulletin of the Essex Institute, III, p. 123.

[2] Transactions of the Nova Scotian Institute of Natural Science, VII, p. 286.

[3] Popular Science Monthly, December, 1893, p. 243.

[4] Rev. W. M. Beauchamp and Mr. John Robinson, in private letters.

have come under observation are made from a dark green steatite or chlorite, a stone quite common along the Atlantic coast north of the Chesapeake. These pipes have bowls and stems at right angles to each other, and have invariably a beast or bird the head of which projects above the bowl on the side away from but facing the smoker.

Gen. A. L. Pridemore has a specimen found in Lee County, Virginia.

Quite a large pipe in an unfinished condition is from Bradford County, Pennsylvania, collected by Messrs. O. H. P. Kinney and J. B. Wiggins. It appears to have been sawed out with metal tools. It is 10 inches long, 4½ inches high, with a diameter of bowl of 1½ inches. As seen in fig. 100, it is completely blocked out and is in a condition to indicate that it was intended to be completed, representing some creature grasping the bowl with all four legs, the head projecting 1½ inches above the adjacent rim of the bowl. On the sides depressions have been gouged out with a tool with a round back, single strokes measuring over 1 inch in length, the smoothness of which indicates that it was a metal gouge. The bowl and stem holes, bored by means of metal drill points, are respectively five-eighths and five-sixteenths of an inch in diameter. The stem is broken at a depth of 1½ inches where the drill has encountered a flaw, which accounts for its having been cast aside. We see here much of the process of manufacture of the elaborate stone pipe, the specimen first being rudely outlined; next the bowl and stem were bored, then the elaboration of carving was completed, leaving the polishing to the last.

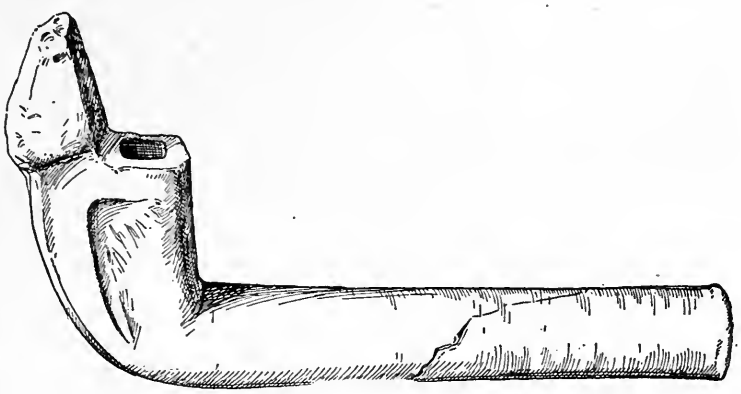

Fig. 100.

RECTANGULAR PIPE.

Bradford County, Pennsylvania.

Cat. No. 58851, U.S.N.M. Collected by O. H. P. Kinney and J. B. Wiggins.

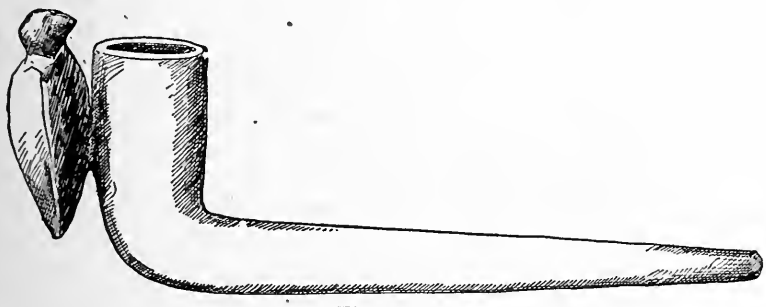

Fig. 101.

RECTANGULAR PIPE.

Lancaster County, Pennsylvania.

Cat. No. 27037, U.S.N.M. Collected by T. H. Bean.

In fig. 101, found in Lancaster County, Pennsylvania, by Dr. T. H. Bean, like fig. 100, is a pipe of steatite 8½ inches long and 3 inches

high. The bowl of this pipe is $1\frac{1}{4}$ inches in exterior diameter. Though the stem is 7 inches long to its point of junction with the bowl, it does not exceed three-eighths of an inch in its greatest diameter. The creature on the bowl appears to be intended to represent a bird, though, whatever it be, it is inclined to the left and has incised lines on the back as though intended to represent wings. On the breast there are marks in one place, apparently made by a file, and on the bowl similar marks are seen. The individual making the pipe has failed to obliterate the tool marks in smoothing the surface, which in this instance has an unusually good polish. Without the figure the pipe is in outline similar to the briarwood pipes of the present day. The material is steatite such as has been worked by the natives along the whole Atlantic coast. This pipe was found near Bainbridge during the excavation of the Pennsylvania Canal. A similar pipe, but an inch shorter, belonging to the Hon. W. J. Almon, of Halifax, is spoken of by Mr. Harry Piers as being the most remarkable one found in the Provinces. It was discovered in 1870 under an upturned copper kettle within 10 rods of an old French trail in Hants County, Ontario. It is said to have a well-carved lizard grasping the bowl, while "across the back of the neck appears a row of five elliptical cavities, their greatest length being in the direction of the body."[1]

The material of which these pipes in the north are made is described as a fine-grained stone, probably a steatite, the elliptical depressions on which call to mind cavities noticeable among the stone and clay pipes of the St. Lawrence River and northwestern New York, such as are supposed to have been employed by the Iroquoian tribes.

There is a cast in the U. S. National Museum collection of a pipe of this type (Cat. No. 13804), having the same long stem, which is said to have been found in a mound in Warren County, Ohio, collected by Mr. J. H. Jenkins, and upon which an animal faces the smoker from the far side of the bowl, as in those pipes of similar type herein figured.

The Rev. William M. Beauchamp calls the writer's attention to a clay pipe of this general type, though much smaller, which was found in Jefferson County, New York, upon the bowl of which there was represented a crayfish with one claw broken off, though such a pipe would appear to belong rather to the Iroquoian type. Mr. Beauchamp also states that turtles are often represented in the same way, as are many animals and birds on pipes of the Iroquoian type.

Mr. David Boyle illustrates a pipe of white stone, which was found on Baptiste Lake, Hastings County, Ontario, upon the outer side of which the animal holds the bowl in the grasp of its four legs, while its tail reaches down the bowl and under it and along the stem[2] in the direction of its longest axis.

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[1] Relics of the stone age in Nova Scotia, Transactions of the Nova Scotian Institute of Natural Science, IX, p. 54.

[2] Notes on Primitive Man in Ontario, p. 52, fig. 121, Toronto, 1895.

The stone from which the French Canadians early made pipes is, according to Peter Kalm, the Swedish traveler and botanist, a limestone found in strata between the lime slate of the country, and which he calls pierre à calumet. These rectangular pipes, having birds or other creatures in relief on their bowls, were made, in all probability, either with tools obtained from the whites, or by the whites themselves. The gouge marks in the bowl, the sharp striæ of the drill, the high polish, and file marks, all go to confirm this belief, while the finding of one of them under a copper kettle identifies pipe and kettle as contemporaneous. These, together with the artistic treatment of the subject, seems to indicate a stage of development above and beyond primitive conditions. This suggestion will probably be combated, though a careful comparison of American Indian pipes carved in imitation of different members of the animal kingdom, are so little like those fetiches which are known to be of purely Indian origin, the tool marks of knife or file are so distinct, and the treatment of the subject so clearly European, as to leave but little doubt of their modern origin.

There is evidence of the existence at an early colonial period of metal pipes, both of copper and of iron, but few have survived owing to the corrosive effects and the dampness of our soil. Those of iron were of European origin, while copper pipes were possibly of pre-European date. Judging from allusions by early writers, the Indians in places also made pipes of wood and of bone, though none appear to have been discovered, excepting those tubes of cane which were buried in certain places in New Mexico.

Atwater says: "Pipe bowls made of copper, hammered out and not welded together but lapped over, have been found in many tumuli. General Tupper described such an one to me, found by him on the elevated square at Marietta, or rather a few feet below that work, and similar ones have been discovered in other places."[1]

Haywood reiterates a similar remark in reference to the finding of hammered copper unwelded pipe bowls in the mounds of Tennessee,[2] and calls attention to the finding of objects of gold, silver, and copper and of coins in the mounds.

Hendrick Hudson, in 1609, speaks of the people of New York on the east sand bank in the Narrows who "came aboard us and brought tobacco. They have great pipes of yellow copper, and pots of earth to dress their meats in."[3]

The memory of such pipes had survived to the end of the last century, for Kalm, speaking of the same locality, says, "However, they [the Indians] knew in some measure how to make use of copper.

[1] Caleb Atwater, Description of the Antiquities of Ohio, Archæologia Americana, I, p. 224.

[2] John Haywood, Natural and Aboriginal History of Tennessee, p. 343, Nashville, 1823.

[3] Robert Jouet, Third Voyage of Master Henry Hudson, p. 81 (Hakluyt Society).

Some Dutchmen who lived here still preserved the old account among them that their ancestors on their first settling in New York had met with many Indians who had tobacco pipes of copper, and who made them understand by signs that they got them in the neighborhood. Afterwards the fine copper mine was found upon the second river between Elizabethtown and New York."[1]

In a monograph of the archæology of Ohio, Mr. M. C. Read speaks of hammered copper pipes as being very uncommon, he having seen only one specimen.[2] Squier and Davis express their belief that the North American Indians possessed the knowledge of some secret or forgotten process by which copper was hardened.[3] This is an assertion which has often been advanced by archæologists, referring to metal used both in South America and in Egypt, but for which assertion there appears no foundation other than that, as these peoples carved hard stone, and had no iron, therefore they must have known how to harden copper. Since, however, it has been demonstrated that the stone hammer, common to all parts of the earth, could cut the most obdurate stones with ease and dispatch, such assertions must be received with great caution.

Dr. E. A. Barber refers to a copper pipe found in Montour County, Pennsylvania, concerning which he expresses doubt as to whether it be aboriginal, and suggests that it may have been traded to the Indians by Europeans,[4] though if the natives hammered copper there is no reason why they should not have formed it into tubes. Another tobacco pipe, made of lead, was found in an Indian grave at Revere, Massachusetts.[5]

The writer has seen a tomahawk pipe made of tin or lead, now in the museum of the University of Pennsylvania, which was probably of the date of the American Revolution, if not later.

A large number of stone pipes in the U. S. National Museum collection, which were found in North and South Carolina and Georgia, are made of a dark green chlorite, which is of a color suggestive of copper. These pipes have usually embossed disks upon their bowls, and tongues reaching from stem to bowl, carved in a manner to leave little doubt that they had metal prototypes.

Metal pipes are recorded of so many various types and have been found in so many different localities as to suggest their common use at a very early period. Most of these pipes, however, are either cast or brazed, or are of a form which is quite modern, though one specimen made of lapped sheet metal is probably of aboriginal workmanship, though possibly of a post-European date. Although the writer is of opinion that metal pipes do not antedate European occupation of the

[1] Peter Kalm, Travels into North America, I, p. 384, Warrington, 1771.

[2] Archæology of Ohio, p. 51, Cleveland.

[3] Ancient Monuments of the Mississippi Valley, p. 196.

[4] Antiquity of the Tobacco Pipe in Europe, American Antiquarian, II, p. 5.

[5] Annual Report of the Peabody Museum, II, p. 483.

country, it must be admitted that the evidence relating to their age is of so fragmentary a character as not to warrant the positive expression of an opinion on the subject.

De Soto as early as 1539 with a large body of men crossed an extensive section of the southern portion of what is now the United States. His people were familiar with the working and fusing of metals, and several of his soldiers wandered off and were never heard from again, and he is supposed to have penetrated far toward the borders of Kentucky.[1] Fifty years later the English landed in Virginia, and from that period for one hundred and fifty years Spanish, French, English, Dutch, and Swedes traded along the coast and far into the interior with the natives for their peltries, and their intercourse was of a character to familiarize them with the white man's implements and his use of metal.

Mr. Clarence B. Moore found at Fairview, Camden County, Georgia, a foot below the surface in a mound, a deposit of calcined human bones beneath a local layer of oyster shells, and associated with the bones was a sheet-copper ornament with repoussé decorations.[2] He refers also to four rings found on the finger of a skeleton at Madisonville, Ohio, by Professor Putnam, which were made from bands of sheet copper. Besides finding a copper finger ring in a mound near Woodbine, Georgia, and also a portion of a disk of copper in a mound in McIntosh County, Georgia, which was carbonated through, Mr. Moore also found an 8-inch copper celt in a mound north of Creighton Island, Georgia.[3]

Such objects are said to be usually found near the surface, and polychrome and other glass beads were found in the mounds at a depth of 2 feet with human remains or near the surface.[4]

Glass beads, pieces of china, copper coins, gold ornaments, and silver crosses have been found on so many occasions in the graves and mounds of the interior associated with human remains as to suggest that the trade with the whites was considerable at a period when mounds were still being constructed and while the Indian was yet living under primitive conditions.

MICMAC PIPES.

As far south as the borders of Kentucky and extending as far as the Blackfeet wander, in Labrador and across the continent almost if not quite to the Pacific Ocean, there is found a type of pipe which appears quite primitive in form, yet which is still in use in the northern part of the continent. It has a bowl, in shape not unlike an inverted acorn, which sits upon a keel-like base, broadest where it touches the bowl, and extending beyond the bowl at times an inch or more on each side.

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[1] Bennett H. Young, The News, Louisville, Kentucky, April 2, 1896.

[2] Certain Aboriginal Mounds of the Georgia Coast, Journal of the Academy of Natural Sciences of Philadelphia, XI, p. 10, 1897.

[3] Idem, pp. 13, 14, 25, 41, Philadelphia, 1897.

[4] Idem, pp. 14, 23, 66, Philadelphia, 1897.

Through the top of this base or keel there is drilled a stem hole one-half its length until it intersects at right angles the base of the bowl. The tops of these terraced bases are seldom more than half an inch wide, though from front to back they are often 3 inches or more long, and from top to bottom they are as deep as long. The sides of the bases are parallel to each other, and are in two or three terraces, decreasing often until the lower part of the base is scarcely more than one-eighth of an inch thick. Through this base there are almost invariably one or more perforations.

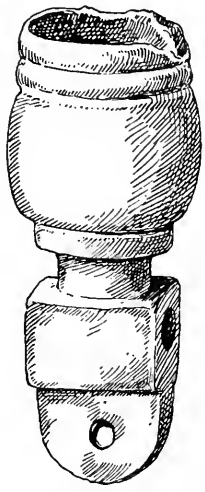

Fig. 102.
MICMAC PIPE.
Newark, Ohio.
Cat. No. 17314, U.S.N.M.
Collected by W. Anderson.

That the northern tribes have long been familiar with carving must be admitted, for Lescarbot says of the Micmacs[1] they "have the industry both of painting and carving, and do make pictures of birds, beasts, and of men, as well in stone as in wood, as prettily as is done by good workmen in these parts; and notwithstanding they serve not themselves with them in adoration, but only to please the sight, they use some private tools, as in making tobacco pipes."[2]

Prof. Daniel Wilson refers to Pabamesad, or the Flier, still living on the Great Manitoulin Island, generally known as Pwahguneka, the pipe maker, literally, "he makes pipes." "His saw, with which the stone is first roughly blocked out, is made of a bit of hoop iron, and his other tools are correspondingly rude; nevertheless the work of Pabamesad shows him to be a master of his art."[3]

Professor Wilson refers to the black pipestone of Lake Huron, the white pipestone from St. Josephs Island, Lake Huron, and the red pipestone of Coteau des Prairies, all obtained from the different tribes using these stones.

Gilpin says the Micmacs used "shallow stone pans with quills and reeds stuck in them, but did not cultivate tobacco."[4]

The only shallow stone pan apparently answering such description would be the disk or jew's-harp pipe usually found to the southward, though examples have been encountered on the northern side of Lake Huron.

Fig. 102 is a fine-grained, brown, argillaceous stone pipe, about 2 inches high, with a greatest diameter of three-fourths of an inch, from Newark, Ohio, collected by Mr. W. Anderson. It is ground over its whole surface; the bowl has an interior uniform diameter of five-eighths

[1] Souriquois, who were the Micmacs of New Brunswick, not of Nova Scotia, and Amorichiquois, literally the people of small dogs, an Algonquin people of New England south of the Alemaki.

[2] Relics of the Stone Age in Nova Scotia, quoting Lescarbot, Transactions of the Nova Scotian Institute of Natural Science, 1894 and 1895, IX, p. 57, note.

[3] Prehistoric Man, I, p. 392, London, 1876.

[4] Transactions of the Nova Scotian Institute of Natural Science, III, p. 222.

of an inch, carried to a depth of seven-eighths of an inch, and in this respect resembles the mound pipes. At the base of the bowl a one-eighth inch hole perforates the stem opening, which enters through the longer axis of the base. The keel-like bases of these pipes are almost invariably bored from side to side with holes from one-sixteenth to one-eighth of an inch in diameter, for the purpose of attaching strings to prevent loss in the snow, leaves, or grass, it being noticeable that the pipes of those places where deep snows commonly lie are more apt to be of a shape indicating a string attachment for the stem than are those found in warmer latitudes. A specimen similar to this pipe (Cat. No. 115452, U. S. N. M.), from a mound at Prairie du Chien, Wisconsin, collected by Mr. J. W. Emmert, is composed of an almost white limestone, possibly the white pipestone of Lake Huron. It has a bowl in the shape of an elongated cone, gradually lessening toward its base, the whole pipe being 3 inches high, and has the lateral perforation so commonly observed.

The Rev. W. M. Beauchamp refers to another pipe of this type which he attributes to Seneca ownership and thinks the type recent. A similar pipe was found near Waterloo, Dekalb County, Indiana.

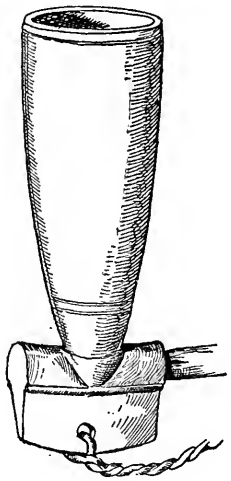

Fig. 103.
MICMAC PIPE.
Ungava, Labrador.
Cat. No. 1119, U.S.N.M.
Collected by Lucien M. Turner.

Fig. 103 is a modern pipe, having a stem of spruce wood, from Ungava, Labrador, collected by Mr. Lucien M. Turner, and is of a blood-red banded slate, with yellow veins running through it. It is 3½ inches high, the bowl decreasing in diameter to half an inch at the point where it joins the keel-like base, the stem being attached to the pipe by a fine sinew yarn. There are three lines, two at the bottom and one near the rim, and incised on the bowl; on the base file marks are distinct. Mr. Turner says of these pipes: "They vary but little in shape and are liable to crack if used in cold weather, and there is considerable difference in size. The largest ones are made of green stones. The rough stone for the pipe is selected and chipped into form. The successive operations of wearing it down are accomplished by means of a coarse file or harder stone."[1]

It is surprising to find evidences of the use of the file on the surfaces of so many pipes of stone which are considered to belong to the most primitive periods. The pipe of the Déné who live between 50° and 52° 30′ north latitude and between the Fraser River and the Cascade range of mountains, is identical in type with these pipes. Father Morice remarks: "A fact which will perhaps elicit incredulous comment is that not only our aborigines' earliest acquaintance with tobacco, native or nicotian, dates only from 1792 for the Tsé Kehné, and 1793

[1] The Hudson Bay Eskimo, Eleventh Annual Report of the Bureau of Ethnology, p. 304.

for the Carriers, but even the very act of smoking was unknown to them prior to those dates. As a consequence, pipes of any material or form are an adventitious item amongst them. Bowl and stem are connected by a chain of dentalium shells alternating with colored glass beads. A pipe similar in form, but without the string of beads and shells, was also in use among the Shushwap Indians, the southern neighbors of the western Dénés, as appears from a sketch in Dawson's notes on the Shushwap Indians proper of British Columbia."[1]

This author asserts that "both the Tsé Kehné and the Carriers are positive tobacco was unknown to their ancestors previous to their encounter with Sir Alexander McKenzie."[2]

A pipe of this character from the Shushwap people of British Columbia, between the Fraser River and Thompson River, is described by Dr. George M. Dawson.[3]

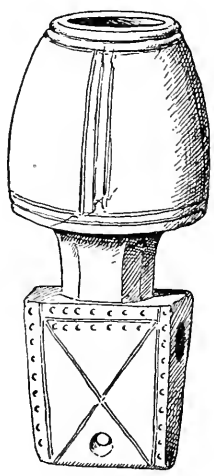

Fig. 104.
ORNAMENTED MICMAC PIPE.
Fort Niagara, New York.
Cat. No. 6196, U.S.N.M. Collected by E. Jewett.

An ornamented pipe (fig. 104) of this type from Fort Niagara, New York, collected by Col. E. Jewett, is 3 inches high, the bowl having an exterior greatest diameter of $1\frac{3}{4}$ inches. The base is wedge shaped, between which and the bowl there is a narrow neck or shoulder cut in octagon. The stone is a black slate, probably the black pipestone of Lake Huron, to which Professor Wilson referred. The bowl is ornamented with perpendicular and circular parallel lines in panels, the base having small depressions around three of its sides and two straight lines crossing each other which have been incised with a steel tool apparently. A pipe through the base of which are two holes, one above the other, is referred to by Piers, "the bowl and keel of which are most tastefully ornamented with single and double straight lines, dots, very short diagonal dashes, and conventional branches of foliage, all arranged in neat design, which entitle the carver to much credit for his excellent work."[4]

The same author refers to another specimen of the Micmac pipe, "the base of which is cut into three lobes, each of which has a small perforation through it, probably for the purpose of attaching some ornament." This pipe was found near the river Dennis, Cape Breton. Yet another, though more finely finished, was found at Dartmouth in 1870, with only one hole through the keel, and a similar one made of red

[1] Father A. G. Morice, Notes on Western Dénés, Transactions of the Canadian Institute, session 1892–93, p. 36.

[2] Idem, p. 36.

[3] George M. Dawson, Notes on the Shushwap People of British Columbia, Transactions Royal Society of Canada, 1891, p. 12.

[4] Harry Piers, Relics of the Stone Age in Nova Scotia, Transactions Nova Scotian Institute of Natural Science, 1894–95, IX, p. 57.

clay was found at Halifax which was considered to be of European manufacture, on one side of the base of which is scratched 1560, to which, Mr. Piers thinks, no importance can be attached.[1]

Prof. John Robinson, of the Peabody Academy of Science, Salem, Massachusetts, refers the writer to yet another specimen of this class, from Mickelfield, Pictou County, Nova Scotia, having an ornamented keel-like base, perforated with five holes. The pipe is made of talcose slate, nearly black in color, and was found 5 feet below the surface in digging a well. The locality where this pipe was found has been settled for one hundred and fifty years. Professor Robinson thinks the pipe was certainly made with a knife and other steel tools, and as it is fresh, clean cut, he supposes it either to have been made by a white man and given to the Indians, or, if made by the Indians, that it was done with a white man's tools.

Another pipe of this type, from Grosse Pointe, Lake St. Clair, Michigan, is referred to in the Smithsonian Report of 1873 as "an object worthy of some admiration, though wanting in symmetry in its details. In its general appearance it is almost elegant, and even graceful. It is formed of greenstone and is beautifully polished, the workmanship, as a whole, displaying much skill. This singular relic is in perfect preservation, with the exception of part of the base of the bowl, which in shape resembles a half-closed tulip, a small portion is also wanting. The date 1697, inscribed on one side of the base, is of interest. The antiquity of the pipe is, in my estimation, much greater than this would imply. The date of the settlement of Detroit is 1701, but the Jesuits and other white men had already penetrated to this region many years before."[2]

Hind refers to a pipe of this type which Mis tick oos, a Cree, when relating his adventures, raised the pipe he held in his hand and exclaimed: "This is what my Blackfoot friend gave me one day; the next he killed my young men; he is now my enemy again."[3]

Holm's remark, referring to New Sweden, "that the Indians leaned upon their pipes," would be received with incredulity were it not that Hind represents "the Fox," a Plains Cree Indian, holding in his hand a pipe upon which he leans as one would upon a staff.[4]

The office of custodian of the great pipe is an important one among the Blackfeet, according to Warren, who asserts that a person "is appointed every four years by the elders and chiefs to take charge of the sacred pipe, pipestem, mat, and other emblems of their religious beliefs. A lodge is allotted for his especial use to contain these emblems

[1] Transactions of the Nova Scotian Institute of Natural Science, 1886–1890, p. 286.

[2] Henry Gillman, The Mound-Builders and Platycnemism in Michigan, Smithsonian Report, 1873, p. 370.

[3] Henry Youle Hind, A Narrative of the Canadian Red River Exploring Expedition of 1857, p. 126, London, 1860.

[4] Idem, II, pp. 126–127, plate v.

and articles pertaining to his office."[1] The Blackfoot pipes "are often ball or pear shape, a foot in length. The stem is of wood, broad, flat, or round—at times like a snake. The handsomest are the great medicine pipes. The tobacco they smoke consists of the little round dry leaves of the bearberry (*arctostaphylos uva-ursi*), called by them Kocksinn."[2] Hind illustrates several of these pipes, selected from his own collection, that are from the Cree, Blackfeet, and Chipewayan tribes.[3] Schoolcraft also illustrates the same pipe as Chipewayan.[4]

There is in the collection of the U. S. National Museum a cast of a pipe of this type said to be from Putnam County, Ohio (Cat. No. 58169), which represents in its bowl the head of an individual, apparently a European, which is probably of quite a recent period.

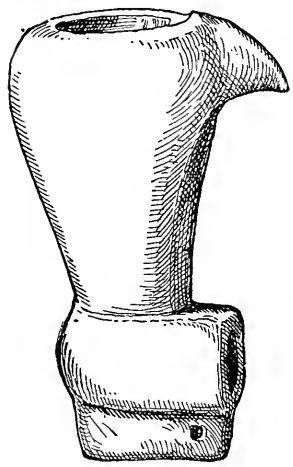

Fig. 105.

BIRD'S HEAD MICMAC PIPE.

Oriskany, New York.

Cat. No. 6819, U.S.N.M. Collected by E. Jewett.

A pipe from Oriskany, New York, collected by Col. E. Jewett, $2\frac{3}{4}$ inches high, made from a gray steatite, appears to be rather a crude effort to represent the head and beak of a bird, and is shown in fig. 105. The bowl and stem are without ornament, excepting five small dots in a row, one above the other, extending along a facet between the bird's beak and the top of the stem. A hole in the base for the string is scarcely more than one-sixteenth of an inch in diameter, the cavity of the bowl being seven-eighths of an inch in diameter, the sides of the interior of the bowl being parallel, a common but not invariable feature in pipes of this type.

By far the most ornate specimen of a pipe of this type yet described is one (fig. 106) in the collection of Mr. E. A. Douglass, which is $3\frac{1}{2}$ inches high and $1\frac{1}{2}$ inches wide and made from a close-grained dark brown stone. On its base are circles and lines in ornamental order which would answer the description of the Micmac pipe described by Mr. Piers; but there is a further ornamentation which adds greatly to its interest. Surrounding the bowl are four animals, carved practically in the round, which are apparently intended to have a totemic significance. Standing on the narrow keel base, with his back to the stem, is a bear, his two hind feet on the stem, while with his fore paws he appears to be reaching up as though endeavoring to get into the bowl; the end of his muzzle is even with the upper edge. Facing the bear, on the other end of the bowl, with its tail touching the stem, also erect and clasping the bowl with all four legs, is another animal, apparently

[1] William W. Warren, Minnesota Historical Collections, V, p. 68.

[2] Maximilian von Weid, Reise in das innere Nord Amerika I, p. 570, plate XLVIII, Coblenz, 1839.

[3] A Narrative of the Canadian Red River Exploring Expedition of 1857, II, p. 140.

[4] North American Indian Tribes, Pt. 2, plate 70, fig. 7.

an otter. On the bear's right, also climbing the bowl, is a beaver at full length, while opposite the beaver is a terrapin, or turtle, also clasping the bowl and trying to climb to the top. The beaver's head is even with that of the bear, as were presumably the heads of the otter and terrapin, which, unfortunately, have been broken off at the neck. The shell of the turtle, the scales of his legs, and his claws, and the hair and limbs of the other animals are carved with the minutest regard to detail. The etching of semicircles, circles, conventional branches of plants, dots, straight and curved lines, all bear evidence of foreign influences and metal tools, every detail being executed with such skill and taste as to leave no doubt of its being the work of an artist. Such care in the manufacture of a stone pipe is proof of its being intended for a person of importance, or a present on some occasion of unusual significance between the French or English and the Indians. The animals here represented are all totems of the Iroquois, and are said also to be those of all the tribes from Louisiana to Montreal.[1]

Fig. 106.
TOTEMIC MICMAC PIPE.
St. John River, Maine.
Collection of Andrew E. Douglass, New York City.

This pipe is said to have been found on the bank of the St. John River, in northeastern Maine. There are in the Bragge collection pipes apparently of this type from the area where these are referred to as being found: One, from Canada, having upon it two beavers and two smaller animals; one, from below Quebec, with two dogs and two bears upon it; one, from an island below Quebec, having on it an eagle, monkey, bear, cat, and a dog; another, two bears, a fox, and a bird, all apparently of this Micmac type.

A graceful little pipe of catlinite (fig. 107) collected by Mr. J. Peters, from Kentucky, $1\frac{3}{4}$ inches high, upon the stem of which the figures 1717 are rudely incised, is quite an artistic affair. Whether these figures indicate an actual date, however, is a matter impossible to determine. The bowl is badly broken, though the base is whole and consists of a crouching animal, and has a single hole for the string.

[1]Lewis H. Morgan, League of the Iroquois, p. 79, Rochester, 1851.

The specimen being highly polished would indicate a probable modern origin. The bowl and stem both have thin walls and the unusually large aperture of the stem is the only departure observable from type characteristics.

This type, it will be observed, extends practically from the Atlantic to the Pacific, through the territories of Athabascan, Iroquoian, and Algonquin linguistic stocks, and so commonly shows file marks and high polish as to suggest the white man's presence, for it is scarcely necessary to say the file could not be acquired from native sources, and high polish of implements is almost unknown through the center of the American continent among tools of purely aboriginal make until the Indians possessed a supply of the white man's implements. This type is undoubtedly an old one, and some of the specimens bear evidence of being made with primitive tools, though the territory through which they are distributed is that of the Hudson Bay Fur Trading Company, and very likely is of a type sold by them to the Indians. The dates on these pipes add interest to them beyond a mere record of their possession by the whites at a given period. The file mark may be the only evidence of its having supplanted the gritty stone in the Indian's hand, and the polish only indicative of a natural advance over the primitive ground surface.

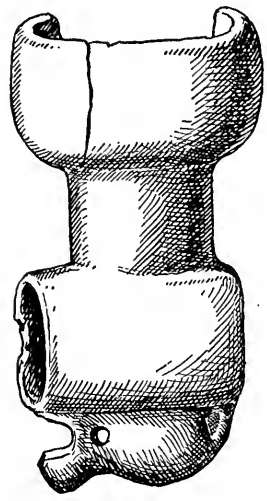

Fig. 107.
CATLINITE PIPE.
Kentucky.
Cat. No. 16690, U.S.N.M. Collected by J. Peters.

Mr. Beauchamp has called the writer's attention to a peculiar pipe, made from black steatite, found in Onondaga County, New York, the bowl of which is shaped like a man's head, the eyes "inlaid with hollow bone," the type of face being European. The stem hole is at right angles to the bowl, but is smaller than is the case with the Micmac pipe; a projection below the bowl may be intended as a handle to hold it by when hot. A somewhat similar outline is noted in a pipe made of steatite, and found in 1844,[1] illustrated by Schoolcraft, said to be from the Grave Creek Mound in Virginia.

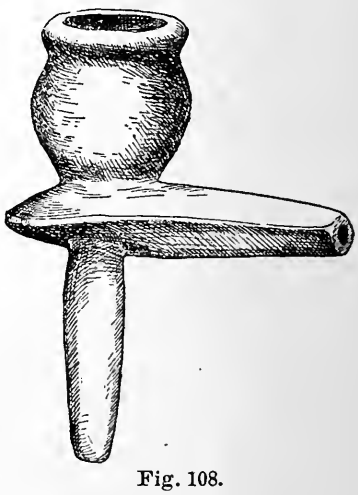

Fig. 108.
PIPE WITH HANDLE.
Loudon County, Tennessee.
Cat. No. 116057, U.S.N.M. Collected by J. W. Emmert.

A fair specimen of these pipes is one (fig. 108) from a mound in Loudon County, Tennessee, collected by Mr. J. W. Emmert, which has this projecting base extending below the bowl, the stone being a greenish serpentine or steatite, on the surface of which the file marks

[1] North American Indian Tribes, Pt. 1, p. 75, plate 8, fig. 4.

are quite distinct. The specimen is 2½ inches high and 2 inches long, the shape of the bowl opening being of a distinctly elliptical form, similar to certain of the typical mound pipes. Another pipe of this character was found at Newark, Ohio, on the bowl of which there was an animal head.

A specimen of the same type in the collection of the Davenport Academy of Natural Sciences was found in Jo Daviess County, Illinois, and is made of pipestone of slightly greenish tinge.

DISK PIPES.

There is a pipe of most peculiar shape, known commonly as the "disk pipe," so called from the discoidal stem, which at first glance one would be apt to take for its bowl. The larger cavity being in a line parallel to the face of the disk would suggest that the stem was intended to be inserted through the disk, around which a thong would be tied to hold it more firmly in position, the depth of the disk being insufficient to hold a stem unless it were bound in some way.

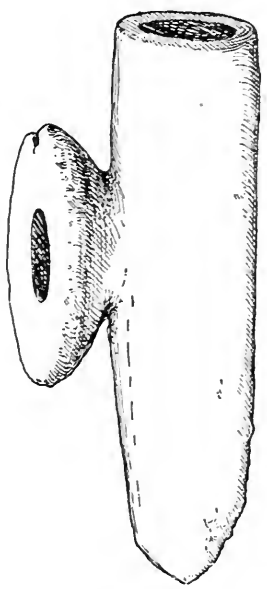

Fig. 109.
DISK PIPE OF LIMESTONE.
Union County, Kentucky.
Cat. No. 7077, U.S.N.M.
Collected by S. S. Lyon.

A longitudinal section of such pipes shows similarity in bowl and stem hole to pipes found in the State of Missouri, though the exteriors are very unlike. This similarity is pronounced in a pipe of oolitic limestone from Chattanooga, which is illustrated by Thruston.[1]

A badly weathered white limestone specimen (fig. 109) of this type is from a mound in Union County, Kentucky, collected by Mr. S. S. Lyon. It is 3¼ inches long, and only 1½ inches from the face of the disk to the opposite side of the pipe, the disk being 1½ inches in diameter, with a bowl cavity of five-eighths of an inch diameter, by one-half an inch for size of the stem opening. Thruston illustrates two specimens of this type made of catlinite, one coming from the Noel stone grave cemetery, near Nashville, Tennessee.[2] In the Douglass collection there are six catlinite pipes of this character from Boone, Saline, and Chariton counties, Missouri.

Mr. David Boyle, of Toronto, also describes two of these pipes, one from Middlesex County, and the other from Huron County, Ontario, one of which was made from catlinite. The bowls and stems are usually carefully drilled, and their exteriors are remarkably well polished. Dr. E. A. Barber describes pipes of this type from mounds in Missouri.[3]

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[1] Gates P. Thruston, Antiquities of Tennessee, p. 201, 1890.

[2] Idem, p. 199.

[3] American Naturalist, XVII, p. 75, figs. 3, 4.

A specimen (fig. 110) of this type, part of the stem of which is missing, from Mount Carmel, Wabash County, Illinois, collected by Mr. J. Schenck, is made of light brown oolitic limestone. In its perfect state it was about 5 inches long, and is so carefully smoothed as to leave no visible marks of the tools by means of which it was made. Finding them of catlinite so far from the quarries would indicate that they are of no great age. Again, the shape is so suggestive of the jew's-harp, an instrument used extensively in trade with the Indians, as to indicate that the pipe itself is modeled after the form of this primitive musical instrument, even though the file marks, so common on many of the pipes, are absent from those coming under the writer's observation. A highly polished specimen was also found in a mound near Greenville, Bond County, Illinois.

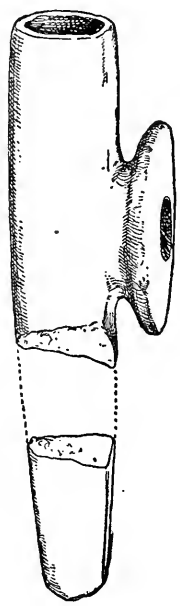

Fig. 110.
DISK PIPE OF OOLITIC LIMESTONE.
Wabash County, Illinois.
Cat. No. 17172, U.S.N.M.
Collected by J. Schenck.

IROQUOIAN PIPES.

Throughout an extensive territory surrounding the Great Lakes is found a type of pipe distinct from those of other portions of the continent, which is so peculiarly distributed throughout the geographical area inhabited by the Northern Iroquoian groups as to justify calling the type "Iroquoian."

Powell's linguistic map shows that at the time of the first contact with the whites Iroquoian was the language spoken by the Indians on both sides of the upper St. Lawrence River, as well as by the tribes living around the shores of Lakes Ontario and Erie, covering the territory of a greater part of the State of New York and of northern and eastern Pennsylvania as well. These pipes are common throughout the greater portion of this area, but are not found in the territory of the Southern Iroquois, in West Virginia, North and South Carolina, eastern Tennessee, part of northern Alabama, and Georgia. The constancy of type in pipes through a given area is uniform, with but little variation, and as a consequence there should be found a similarity in the pipes of the Northern and Southern Iroquoian areas if they dated from a period prior to the separation of the race. Pipes of the Iroquoian type are made both of stone and pottery, the stone being usually a stalagma and the pottery commonly a hard-burned clay without shell tempering. These pipes are trumpet shaped quite often, though rectangular bowls are common. At times they have human heads molded on them, at others the figures are of birds or reptiles, all of which usually face the smoker, though there are numerous exceptions to this rule. The rims of the bowls are often of uniform height, but the edges of some of them are undulating owing to birds or beasts being molded on to the tops of the bowls. The stems of pottery pipes of this type are comparatively short, and their openings quite small, are equaled only by the

modern Zuni or Pueblo pipes. The stems of Iroquoian stone pipes are nearly at right angles to the bowls, whereas the curves in the pottery specimens are similar to those of the metal hunting horn of the European. Another peculiar characteristic of Iroquoian pipes is the form of the bowl, copied apparently from the hats of the soldiers of colonial days, with their high curved front, often affording space for the representation of standing or seated figures, which look as though copied from the sacred pictures or figures of the French churches. Another characteristic of the pipe of almost the whole of the Iroquoian area is observed in a series of ellipsoidal depressions upon the pipe bowl, the significance of which it is difficult to explain, though it is common on both stone and pottery examples. There is still another type of pipe that belongs to this region which has no stem, the form being that of a bird or animal always facing from the smoker.

The writer is inclined to attribute no great age to any of these ornamented Iroquoian pipes, at least none which would antedate French influences, though it is of course admitted that the smoking habit was noted upon the first arrival of the Europeans. So far as a knowledge of the artificial fracture of stones is concerned, or the haunts and habits of wild animals, or ability to follow the tracks of game, or, in fact, all outdoor knowledge incident to the forest or the prairie, the Indian was a past master; but the white man's arrival must have been as remarkable to the Indian as would be to-day a visit to earth from citizens of another planet, and the implements brought from Europe must have appeared marvelous.

It is related that during Cartier's second voyage to the St. Lawrence, in 1535, the captain commanded the trumpets and other musical instruments to sound for the purpose of surprising the natives, and there can be little doubt that the monotony of many a long voyage during the sixteenth and the seventeenth century was relieved by the sounds of music, of which all vessels carried a good supply. In the account of Sir Humphrey Gilbert's voyage in 1583 to the northern part of Newfoundland it is related "that for solace of our people and allurement of the savages we were provided of music in good variety, not omitting the least toys, as Morris dancers, hobbyhorse, and many like conceits to delight the savage people whom we intended to win by all fair means possible."[1]

Champlain, in 1603, relates that he "saw on an island 10 miles from Quinibequy [Quebec] *petun* [tobacco], which they also cultivated;" and he further says "they gave us quantities of *petun*, which they dry and then reduce to powder."[2]

The French appear to have adopted to a great extent the word *petun* for tobacco, a word, judging by early writers, derived from Brazil. Dawson says "the pipes of old Hochelega were mostly of clay, and of

[1] Sir Humphrey Gilbert, Hakluyt's Voyages, III, p. 189, London, 1810, reprint of 1600.
[2] Voyages de Champlain, pp. 95, 113, Paris, 1830.

many and sometimes elegant patterns; some were very plain and small, others of elegant cornucopia or trumpet form, and some ornamented with rude attempts to imitate the human face."[1] One somewhat elaborate example appears to have been found of the celebrated red pipestone or catlinite.

Had primitive pipes been of such a character, it is scarcely credible that Cartier would not have made some reference to so great a peculiarity. Lafitau, however, does refer to the pipe as a "cornet," owing clearly to its trumpet form, which was very pronounced among certain of these Iroquoian objects.

Prof. G. H. Perkins describes the pipes of the Champlain Valley region as "not so elaborate as those in Ohio, only two specimens having been found with faces on them. The stone used was steatite, gypsum, limestone, and slate; platform, bell shaped, trumpet shaped, and tubular pieces occur; the last named in common form, varying from 2 to 15 inches in length."[2]

Hochelega was on the site now occupied by Montreal, and Dawson informs us that the Iroquois, Hurons, and Crees had pipes of the same types with those of Hochelega.[1]

Lafitau (1724) tells us: "Every savage has always with him his petun sack, in which he carries his calumet, or pipe, tobacco, and the means of lighting a fire," but he also says, "they never march without carrying with them a long tube, through which they draw smoke almost to drunkenness; with it they shake up all the fibers of their brain, and become intoxicated, as if they had drunk wine to excess."[3]

He could certainly not have referred to any pipe of the Canadian country adjoining the lakes, for none had long stems, so far as we know, except the Micmac pipe. The Abbé Gallinée, in 1669, referring to the Falls of Niagara, speaks of the Outinaonatona (big-pipe people, Hewitt), Senecas.[4]

Dawson refers to tobacco being found in full force by Cartier, in 1535, and says it was probably cultivated at Stadacona and Hochelega. He says that he has seen tobacco growing on the Laurentian Hills, behind Murray Bay, on the lower St. Lawrence, in latitude 47° 40″, and that the Indians also used wild plants designated as petun and killikinik.[4] It should, however, be born in mind that little was known concerning tobacco as early as the first half of the sixteenth century, and the reference may well have pointed to sumac, red willow, bear berry, or even the squaw bush.

The Kionontatehronon, a people living a two days' journey from the Hurons, and speaking that language, are referred to as the Nation de

[1] J. W. Dawson, Fossil Men, p. 92, Montreal, 1880.

[2] International Congress of Anthropology, Chicago, 1889.

[3] Père Lafitau, Moeurs des Sauvages Ameriquains, II, p, 130, Paris, 1724, quoting Père du Creux Histoire de Canada, I, 76.

[4] Pierre Margry, Decouvertes et Etablisements des Francais, Relation de l'Abbé de Gallinée, Paris, 1875.

Petun as late as 1635.[1] These people, spoken of as Tionontates and Dionondades "were found in 1616, south of Lake Huron and just west of the Hurons. After the Hurons' defeat they were nearly destroyed in continuation of the same war."[2]

Kalm, in 1749, says of the Hurons, "before them hangs their tobacco bag, made of the skin of an animal, the hairy side turned outwards, and each of the Indians," he says, "has a tobacco pipe of gray limestone, which is blackened afterwards, and has a long tube of wood."[3]

These pipes do not appear to correspond in description to those now found in the Huron area of influence, though the tobacco bag was made much according to its owner's taste, and Kalm says that in Canada "every farmer plants a quantity of tobacco near his house in proportion to the size of his family. It is likewise very necessary that they should plant tobacco, because it is so universally smoked by the common people. Boys of 10 or 12 years of age run about with the pipe in their mouth as well as the old people. Persons above the vulgar do not refuse to smoke a pipe now and then. In the northern part of Canada they smoke tobacco by itself; but farther upward and about Montreal they take the inner bark of the red Cornelian cherry [*Cornus stolonifera*], crush it, and mix it with tobacco to make it weaker."[4]

In 1642 Fathers Raymbault and Jogues left the mission of St. Mary, and after seventeen days' navigation arrived at the Falls, where they met about 10,000 persons, and "learned of many other sedentary people who never knew European nations, among others the Nadouessis (Sioux), located northwest or west of the Falls. The first nine days they were traveling through another great lake, which begins above the Falls (Erie). The last nine days they travel through a river which runs into the land. These people cultivate corn and petun."[5]

The people referred to in 1667 as the Nadouessouek, "near the great river called the Messipi, are said to have lived in a prairie country abounding in all sorts of game. They have fields where they do not grow corn but only petun."[6]

Of the "Mohawks, Oneydoes, Onondagos, Cayugas, and Senekas," in 1724, according to Cadwallader Colden, it is said "that each of these nations is again divided into three tribes or families, who distinguish themselves by three different arms or ensigns, the Tortoise, the Bear, the Wolf."[7]

Robert Rogers adds to this list, in 1765, of distinguishing ensigns or coats of arms, the otter and the eagle.[8]

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[1] Relation des Jésuites en Canada, 1635, III, p. 33; 1636, p. 105; 1637, p. 163.

[2] American Antiquarian, I, p. 228; Historical Magazine, V, p. 267; New York Colonial Documents, IX, p. 1886.

[3] Travels into North America, III, p. 180, London, 1771.

[4] Peter Kalm, Idem, III, p. 254, London, 1771.

[5] Laudoniere, Relation de la Nouvelle France, p. 97, 1642.

[6] Relation des Jésuites en Canada, III, p. 23, 1667.

[7] Cadwallader Colden, The Five Nations of Canada, p. 1, London, 1724.

[8] Robert Rogers, A Concise Account of North America, p. 226, London, 1765.

Lewis H. Morgan specifies, in 1851, eight tribes in each nation, arranged in two divisions, and names them as follows: Wolf, bear, beaver, turtle, deer, snipe, heron, hawk. These clan names, he says, are common to all latitudes between Montreal and Louisiana.[1]

This arrangement leaves out the classes of the otter and the eagle, referred to by Rogers. The more thorough our knowledge becomes of the Indian the more numerous appear his clans, and for each clan there is its appropriate totem. These totems are constantly represented on the Indian's pipe, scratched into the stone or carved in relief, or at times even carved in the round.

One of the quaintest of references to tobacco, or plants used in the manner of tobacco, is that of Cartier, in 1635. He says:

"There groweth also a certain kind of herbe, whereof in summer they make great provision for all the yeere, making great account of it, and only men use of it, and first they cause it to be dried in the sunne, then weare it about their neckes wrapped in a little beasts skinne made like a little bagge, with a hollow peece of stone or wood like a pipe, then when they please they make pouder of it, and then put it in one of the ends of said Cornet or pipe, and laying a cole of fire upon it, at the other end sucke so long, that they fill their bodies full of smoke, till that it cometh out of their mouth and nostrils even as out of the Tonnel of a chimney."[2]

This reference to the cornet would indicate that the pipe had the shape of the musical instrument or trumpet, which form is very ancient, and is found among the oldest hammered bronze implements of Norway,[3] and probably the rest of Europe. The hunting horn is familiar to all and comes probably from a civilization antedating that of Europe. Rev. W. M. Beauchamp, of Baldwinsville, New York, one of the best authorities in the country on the Iroquoian pipe, says they rarely made stone pipes until they had metallic tools. Many nations, he says, made pipes to sell, as the Petuus of Canada, and the Narragansetts. They were offered to water spirits on Lake Champlain and elsewhere. The more recent Iroquoian pipes, he thinks, have the face usually turned from the smoker. The Iroquoian tomahawk pipes, according to Morgan, were "made of steel, brass, or iron. The choicer articles are surmounted by a pipe bowl, and have a perforated handle that they may answer the double purpose of ornament and use. In such the handle and often the blade itself are richly inlaid with silver. They use it in close combat with terrible effect, and also throw it with unerring certainty at distant objects, making it revolve in the air in its flight. With the Indian the tomahawk is the emblem of war itself. To bury it is peace, to raise it is the most deadly warfare."[4]

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[1] Lewis H. Morgan, League of the Iroquois, pp. 79, 80, Rochester, 1851.

[2] Jacques Cartier, Second Voyage, Hakluyt's Voyages, III, p. 276, London, 1810, reprint of edition of 1600.

[3] J. J. Worsae, Nordiske Oldsage, Copenhagen, 1859, p. 39.

[4] Lewis H. Morgan, League of the Iroquois, p. 364, Rochester, 1851.

The Iroquoian pipes present many unusual characteristics and evidence strong local influences exceeded by none on the continent unless it be the curved base mound pipes of Ohio. Fig. 111 is a homely form of pipe of the Iroquoian area, made of an extremely hard-burned dark pottery, containing no visible mixture of tempering material such as is commonly found in aboriginal earthenware vessels. This pipe was found in Chautauqua County, New York, collected by Mr. L. M. Dwight, and is very similar to modern Pueblo specimens, both in its bowl and stem cavities. It is but 2½ inches long and an inch wide, the walls of the bowl being so thick as to leave the opening only half an inch wide, the stem being brought to a point with an opening scarcely an eighth of an inch in diameter, made apparently as are the Pueblo pipes by inserting a stem of grass in the fresh clay and burning it out in the process of roasting the pipe. This specimen is entirely without ornament, and the writer would be inclined to believe that it belonged rather to the Indians of New Mexico than to New York, were it not that the material of Iroquoian pipes is quite often of this hard-burned earthenware. The Iroquoian pipe has a smaller stem opening than those of the Atlantic coast people generally.

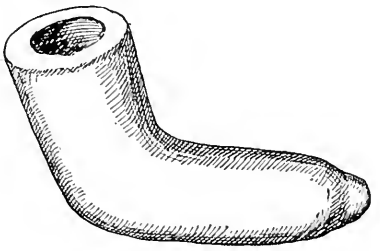

Fig. 111.
POTTERY PIPE.
Chautauqua, New York.
Cat. No. 22165, U.S.N.M. Collected by L. M. Dwight.

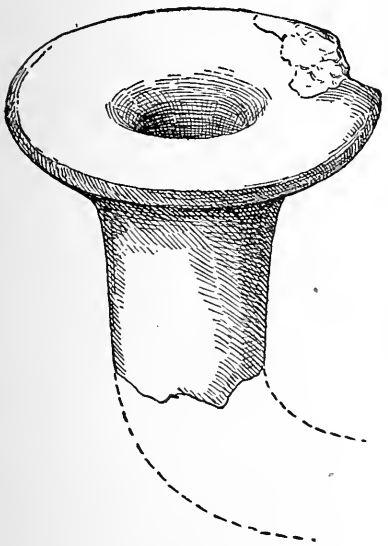

Fig. 112.
TRUMPET PIPE.
Ellisburg, New York.
Cat. No. 8893, U.S.N.M. Collected by Dr. F. B. Hough.

Iroquoian pipes are not uncommonly found with flaring-topped bowls, such as that in fig. 112, which is a pottery specimen collected by Dr. F. B. Hough at Ellisburg, New York. It has a typical bronze hunting-horn shape, such as could be found among the primitive implements of Scandinavia or the rest of Europe. It may be argued that either of these two pipes would answer Cartier's description of a "Cornet." A somewhat similar pipe is herein illustrated (fig. 229) from Tennessee. In either of these the form of the musical instrument is copied. In almost every pipe of the Iroquoian area may be traced forms distinctly copied from European sources.

Rev. W. M. Beauchamp refers the writer to a pipe of this type from Onondaga County, New York, made from a brownish-yellow stone, on the bowl of which there is a human face facing toward the smoker, and to another clay pipe from Cayuga County, in which the bowl and stem are almost in the same plane, the curve being graceful from one end of

the pipe to the other. Mr. G. H. Perkins illustrates, from the Champlain Valley in Vermont, a pipe of this character made of earthenware, upon the surface of which and partially encircling the center of the pipe, are a number of depressions similar to such as are observed upon the Iroquoian limestone rectangular pipes. The more archaic specimens of this type will be found to approach quite closely the straight tube form. Several with but slight curves to them have been found in Cayuga, Onondaga, and Montgomery counties, New York, with markings and other characteristics peculiar to the Iroquoian pipe, some having no ornamentation, others, only ornamentation of the simplest character, until finally we see the human face in great elaboration.

A gracefully curved pottery pipe, with an ornamentally shaped bowl (fig. 113), is from Fremont, Sandusky County, Ohio, and was collected by L. Lappman. This place is near the head of steamboat navigation on the Sandusky River. This type is referred to by Squier as being found on the site of an old Seneca town in Livingston County, New York.[1] The enlarged bowl is encircled with six incised lines made as if in imitation of cord marks, and at the point where the slight shoulder and smaller part of the bowl join are ten nearly equidistant notches cut into the pottery. They are apparently for ornamentation.

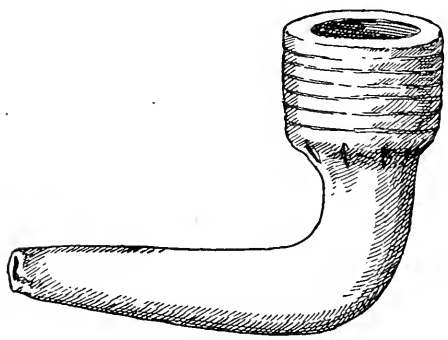

Fig. 113.
IROQUOIAN POTTERY PIPE.
Sandusky County, Ohio.
Cat. No. 45653, U.S.N.M. Collected by L. Lappman.

Morgan refers to the art of making this pottery being lost and says that it was of so fine a texture as to admit of a tolerable polish, the black specimens being so firm as to have the appearance of stone. In some specimens, he remarks, they have in front a human face or the head of a wolf or that of a dog. Of late, he says, the Iroquois cut pipes out of soapstone.[2]

Many of the specimens of Iroquoian clay pipes in the U. S. National Museum are broken. Those which come under the general designation of "trumpet shaped," vary greatly in the curve of the outlines of their bowls, the exteriors of some being round, others square, at other times the sides flare or curl over until they resemble a trumpet. The exterior ornamentation varies as greatly as does the shape of the bowl itself, parallel lines running horizontally, perpendicularly, and diagonally, are constantly encountered and it is not uncommon to find the lines of ornamentation consisting of graceful combinations running in parallel lines or blocks, which, however, seldom or never cross each other, due to some superstition, possibly, in connection therewith. This type is

[1] E. G. Squier, Aboriginal Monuments of New York, p. 76, Smithsonian Contributions to Knowledge, II.

[2] Lewis H. Morgan, League of the Iroquois, p. 355, Rochester, 1851.

found in the Mohawk Valley. Serpent bowls are said by Rev. W. M. Beauchamp to be frequent, and he says the Oneidas were fond of owl's heads, and that sometimes an animal's head was placed above a man's. Mr. E. H. Squier illustrates a clay pipe from Jefferson County, New York, apparently belonging to this class, around the bowl of which two snakes are wrapped in graceful folds, though they do not cross each other. At times there is noted in their bowls a graceful barrel-shaped enlargement, similar in general characteristics to some of the early English trade pipes. The same enlargement of the bowl is also noted commonly in the vase-shaped bowls of pipes intended to be smoked without stems. The flaring bowls are frequently found at Montreal. Mr. Beauchamp calls attention to quite a remarkable clay pipe found in Onondaga County, New York, upon the bowl and stem of which there yet remain fourteen human faces; the stem of this is partly broken off. There are indications that the faces originally extended to the end of the stem.

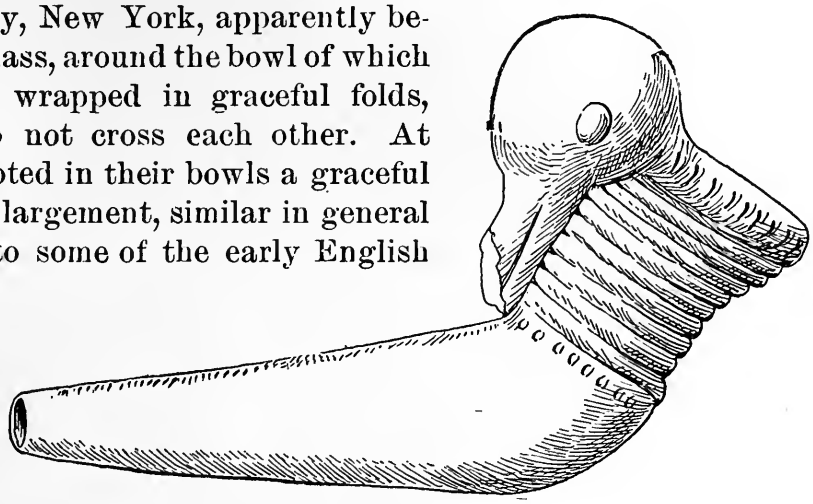

Fig. 114.
IROQUOIAN POTTERY PIGEON PIPE.
Cayuga County, New York.
Collection of W. M. Beauchamp.

Mr. Beauchamp has furnished the writer sketches of pipes that are in his possession from both Cayuga and Onondaga counties, New York, which are strikingly graceful as works of art, especially those representing birds' heads, one of which appears to be a wild pigeon (fig. 114). Another

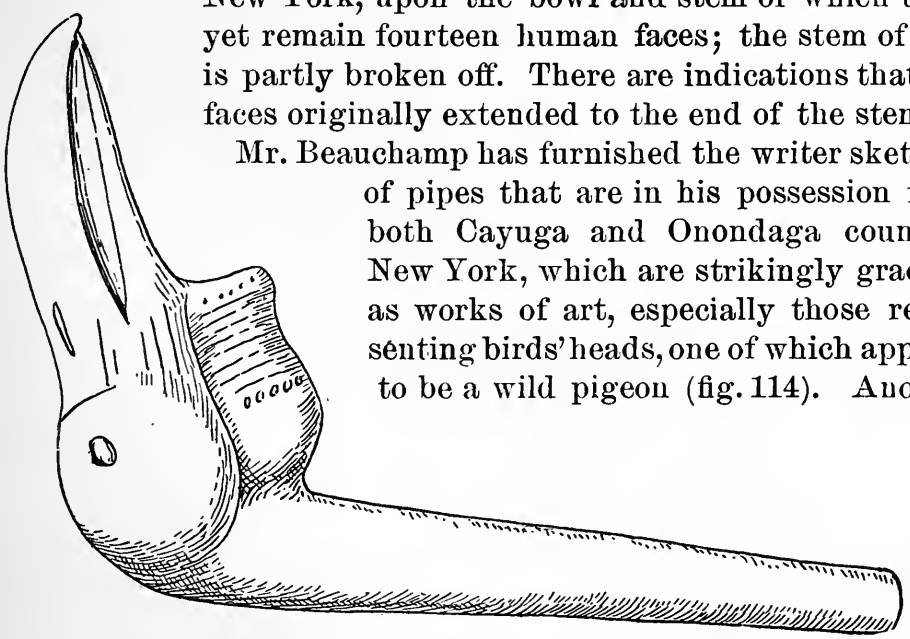

Fig. 115.
IROQUOIAN POTTERY CROW PIPE.
Onondaga County, New York.
Collection of A. E. Douglass.

(fig. 115) represents the bowl of the pipe as a pouch of a bird whose double beak reaches quite as far above the bowl as the bowl itself is deep. This pipe differs materially from those found in the Etowah

mound in Georgia, and the Lenoir burial place in North Carolina; yet there is a characteristic similarity in treatment of both types that indicates similar art environments and concepts, which are only reconciled by attributing them to French or English origin. The character of these pipes differs between North and South sufficiently to entitle each to be classed by itself. There are others of these pipes having upon their bowls the heads of animals, differently treated but all of a highly artistic character. These heads commonly face the smoker, but one, representing a panther, faces to the right side. What adds greatly to the artistic effect of this class of pipes is that in addition to the head represented there is a grouping of incised lines, dots, or ellipsoidal depressions, one or other, or a combination of the three, which have a most pleasing effect. Mr. David Boyle, in his Notes on Primitive Man in Ontario, for 1895, has given a number of illustrations of these Iroquoian pipes of clay, and calls attention to the square-topped class, which he attributes to the Hurons "on account of its prevalence in the district occupied by those people."[1]

Many of the pipes illustrated by Mr. Boyle represent the human faces with anything but Indian characteristics; one, apparently that of a woman, is facing the smoker. A second, very similar one, faces from the smoker. A curious specimen illustrated by Mr. Boyle looks like some animal with a bit in its mouth. Two of his illustrations of the pipes of Ontario represent the snake, one being open-mouthed, and in the second, two twined snakes form the bowl. Mr. Boyle considers that there is no evidence that totemism played any part in this department of aboriginal handicraft, and thinks the great variety of human representations would seem to indicate the mere play of fancy in pipe modeling. In some instances he thinks there may have been a secondary reference to totems[2] referring, of course, to Iroquoian types.

Mr. Boyle's recent illustrations of the Iroquoian pipe suggest that the variety of animal forms and human heads and faces was almost endless, though the variety itself is one of the strongest arguments in favor of the European origin and treatment of the pipe. He speaks of great pits of bones containing at times as many as a thousand individuals, being "without an arrowhead, without a pipe, without a pot, or without a scrap of anything to cheer the forlorn ghosts."[3] He also says, in a communication to the writer, that in the oldest graves he had ever opened no pipes appeared, and it is believed that the more carefully the subject is studied the more proof will be found that this type of pipe with elaborate forms modeled upon it dated from late in the seventeenth if not the eighteenth century.

In the etomology of the word "Iroquois" Mr. Hale finds what he believes to be at least a possible origin in the indeterminate form of the

[1] David Boyle, Notes on Primitive Man in Ontario, p. 32, being an appendix to the Report of the Minister of Education for Ontario, Toronto, 1895.

[2] Idem, p. 32. Also, see Reports of 1896 and 1897.

[3] Annual Report of the Archæology of Ontario, 1896-97, Rice Lake, Ontario.

word *garokwa* (pipe or string of tobacco) "ierokwa," "they who smoke," briefly, "tobacco people," the "Iroquois being well known to have cultivated tobacco."[1]

An extremely hard-burned pottery pipe from Massachusetts, collected by Mr. J. H. Devereux, is shown in fig. 116, which evidences a certain relationship to the last illustration, not only in the material from which it is made, but in the partially encircling lines and a row of notches around the shoulder of the bowl where the lines stop, and also in the character of the bowl, stem, and the curve of the pipe. This specimen is about 2½ inches in height and would if whole be about 4 inches long, the diameter of bowl being generally about an inch. A remarkable feature of this pipe is the human figure on the escutcheon or niche facing the smoker, which is a part of the bowl, this being an occurrence not unusual in pipes found throughout an extensive territory bordering on the St. Lawrence. The figure, which is seated, appears to have been stamped in the clay prior to burning, though a number of notches seem to have been cut around the outer frame encircling the figure after the clay was baked. One can scarcely ignore in this pipe the strong resemblance it bears to the pictures and wood carvings of the whites in their churches and elsewhere, the elevation of the rim being strongly indicative of the front of the hat of the grenadier.

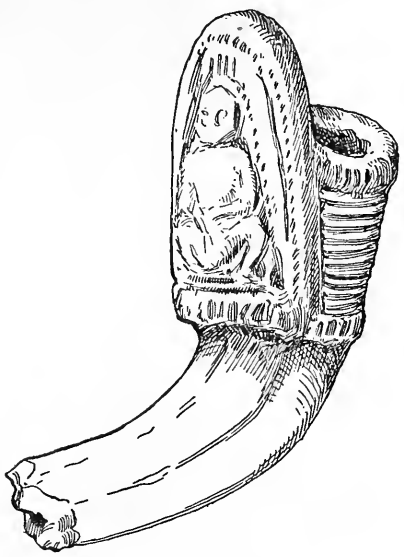

Fig. 116.

IROQUOIS ESCUTCHEON POTTERY PIPE.

Massachusetts.

Cat. No. 6833, U.S.N.M. Collected by J. H. Devereux.

Rev. W. M. Beauchamp, of Baldwinsville, New York, has several examples of this character, found in Jefferson County, New York. The lines commonly encircling the escutcheon are two or three. Mr. David Boyle, of Ontario, finds that the figures usually have the left hand raised to the mouth, the figures themselves being of half or full length, seated or standing.

There are, however, other pottery pipes of the Iroquoian type in which the bowls and stems are almost at right angles to each other and made of stone, that Pierre a Calumet to which Kalm refers in 1749, saying:

"This is the French name of a stone disposed in strata between the lime slate, and of which they make almost all of the tobacco pipe heads in the country. When the stone is long exposed to the open air or heat of the sun it gets a yellow color, but in the inside it is gray. It is a limestone of such compactness that its particles are not distinguishable to the naked eye. It is pretty soft and will bear cut-

[1] J. N. B. Hewitt, American Anthropologist, I, p. 188.

ting with a knife. All the tobacco pipe heads which the common people in Canada make use of are made of this stone, and are ornamented in different ways. A great part of the gentry likewise make use of them, especially when they are on a journey. The Indians have employed this stone for the same purposes for several ages past and have taught it the Europeans. The heads of the tobacco pipes are naturally of a pale gray color, but they are blackened while they are quite new to make them look better. They cover the head all over with grease and hold it over a burning candle or any other fire, by which means it gets a good black color, which is increased by frequent use. The tubes of the pipes are always made of wood."[1]

This stone is found near the Falls of Montmorency, 9 miles below Quebec. In other ways than in the use of the pipe stone "the French in Canada in many respects follow the customs of the Indians. They make use of the tobacco pipes; they mix the same things with tobacco; most of them wear red woolen caps at home and sometimes on their journeys."[2]

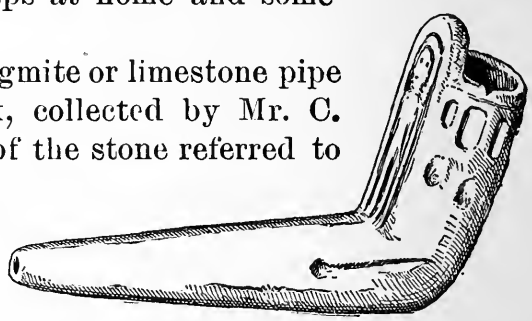

Fig. 117.
IROQUOIS PIPE OF STALAGMITE.
Oswego County, New York.
Cat. No. 26963, U.S.N.M. Collected by C. Rogers.

Fig. 117 represents a white stalagmite or limestone pipe from Oswego County, New York, collected by Mr. C. Rogers, and appears to be made of the stone referred to by Kalm, it is about 4 inches long and has a well-polished surface. Many of the characteristics of the preceding illustration are encountered here, especially the elevation of bowl, as well as the figure facing the smoker, which in this instance is at full length, and instead of being in relief, as in the pottery specimen, is in intaglio, though it is inclosed in a somewhat similar framework, which has two equidistant lines running up each side of the bowl and continuing from one side of the face to the other across the top above the standing figure. Around the upper part of the bowl are a number of ellipsoidal countersunk depressions of irregular sizes, some of which are square or in shape of a parallelogram with rounded corners, the interior of the depressions not being smoothed, but showing the tool marks left by the implement with which the material was removed. These depressions are among the most striking characteristics of Iroquoian pipes of all shapes, and one of the marks most often encountered in pipes of the area influenced by the Iroquoian Confederacy.

The Rev. W. M. Beauchamp has in his collection "a dark marble pipe" of this character from Onondaga County, New York, with the same frontal elevation observed in the illustration, though the ornamentation on the side of the bowl away from the smoker differs. Prof. G. H. Perkins illustrates a similar pipe from the Champlain Valley,

[1] Peter Kalm, Travels into North America, III, p. 231, London, 1771.
[2] Idem, III, p. 255.

which is made from clouded gypsum. The depressions upon the surface, he believes, were intended to be inlaid with pieces of other stone, and considers that there can be no doubt of this because of the unfinished state in which these cavities are left, whereas the rest of the pipe is moderately well finished. Several similar pipes are said to have been found on both sides of the lake.[1] An excellent specimen of this type from Cortland County, New York, is in the Douglass collection.

A cast of a pipe of this class from Montreal shows the human face so grotesquely as to represent the front of the skull with its eyeless sockets and cavities, intended for nose and mouth rather than a living face, not only on that part of the bowl facing the smoker, but on its sides as well. Professor Perkins also illustrates a pipe bowl with several of these elliptical or quadrangular depressions excavated, as he thinks, for the purpose of being filled in with ornamental bits of shell or stone. The bowl of the latter has no stem attached and was apparently intended for smoking with a stem.[2]

Bowls of other shapes have been found in New York with these peculiar depressions cut into their surfaces, and Professor Perkins illustrates a pipe of the rectangular type made of pewter, which probably represented, as he suggests, the transition stage of stone from pottery.

Fig. 118.
IROQUOIS POTTERY PIPE.
Bloomfield, New York.
Cat. No. 6184, U.S.N.M. Collected by E. Jewett.

The pipes do not fully answer Kalm's description in their stems, and of the known specimens most have been found on the eastern side of the St. Lawrence River and Lakes Ontario and Erie. Professor Perkins illustrates a stemless pipe bowl from Vermont made of "the usual steatite," which in form probably more nearly resembles the pipe Kalm describes than does any other.

An extremely hard burned black pottery pipe (fig. 118) from Bloomfield, New York, collected by Col. E. Jewett, upon the bowl of which is molded a human face, exhibits apparently European rather than Indian characteristics, and preserves in the shape of the bowl the peculiarities of the "grenadier hat" form, the usual elevation of the bowl being modified in order the more effectually to allow the modeling of the forehead. In the ornamentation of the bowl of this pipe, especially that part of it behind the individual's ear, a number of broad and narrow lines alternating with each other with rows of dots between them are artistically grouped. The ears are distinctly formed and fairly well modeled, and the eyes have been deeply cut into the pottery subsequent to its

[1] G. H. Perkins, The Calumet in the Champlain Valley, Popular Science Monthly, December, 1893, p. 243.

[2] Idem, p. 241.

burning, as though intended to hold artificial pupils of some different material—a not unknown art in American pipes, especially those of the curved base mound type. The mouth is sawed into the pottery, and not modeled in its plastic condition, as are the other features. This type has also been found in Cayuga and Munroe counties, New York.

A well-burned pottery pipe of Iroquoian type (fig. 119) from Watertown, New York, collected by Col. E. Jewett, shows a rude character of unusual ornamentation, not only in its scalloped bowl, but in the enlarged part of the same, decorated by lines cut into the pottery, though type characteristics are preserved. Pipes of this character are found in a variety of forms, having at times molded on the bowl or around it, or on top of it, the figures of men or animals, including both the grave and grotesque, yet often they are executed with a degree of skill more nearly akin to the higher European art than to that of savages, who, unless they did so in their pipes, do not appear to have produced a single figure carved in the round, except of the rudest character.

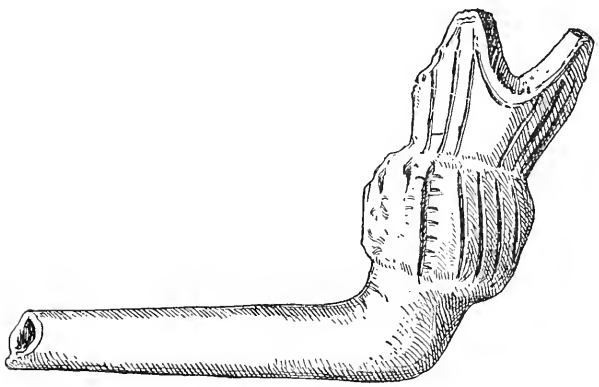

Fig. 119.

IROQUOIS POTTERY PIPE.

Watertown, New York.

Cat. No. 6187, U.S.N.M. Collected by E. Jewett.

Pipes of this type, having square tops to the bowls, belong to the Hurons, according to Mr. David Boyle, of Toronto, one of which, from Fox River of the Illinois, found in a mound in Wisconsin, is figured by him. These, Lapham says, were so small as to suggest that they were articles of fancy rather than of use.[1]

One of these square-topped pipes showing Iroquoian ornamentation was shown to Mr. H. R. Schoolcraft by a chief of Rivière Au Sable, at Thunder Bay, Michigan, on the mainland, as an antique pipe, which the chief averred was smoked by his ancestors.[2] Dawson illustrates a similar specimen from Montreal.

Schoolcraft is probably right in his assertion that though they were attributed to the skill of the American Indians they were not in any instance due to these tribes, but were made for the Indian trade.[3]

This will probably apply with equal force to all these hard-burned clay pipes of Iroquoian type having upon them such varied ornamentation as the representations of men, birds, and animals.

Fig. 120 is a fragment of a small pipe of pottery, from Honeoye

[1] I. A. Lapham, Antiquities of Wisconsin, p. 82, Smithsonian Contributions to Knowledge, VII.

[2] North American Indian Tribes, Pt. 1, p. 75, plate VIII, fig. 1.

[3] Idem, Pt. 4, p. 140.

Falls, Monroe County, New York, collected by Mr. William M. Locke. It is quite small, and shows in what a variety of ornamentation the people making these pipes indulged. Though the animal is not sufficiently well modeled to distinguish whether a mouse or a fox, the eyes, ears, and legs are attached to a rude modeling, indicating a type of art different from what would be expected of a people living in the purest savage state, as the Indians of this region did at the time of first contact with Europeans.

Squier and Davis illustrate an Iroquoian pottery pipe plowed up in West Virginia, nearly opposite the mouth of the Hocking River, where there are abundant traces of an ancient people in the form of mounds, embankments, etc.;[1] on the bowl there is an animal's head which faces from the smoker, and which, judging from the illustration, belongs to the Iroquoian type, not only in shape, but in ornamentation of the bowl as well. While this latter pipe is from a locality quite distant from where similar ones are commonly found, it is within the area influenced to a certain extent by French trade.

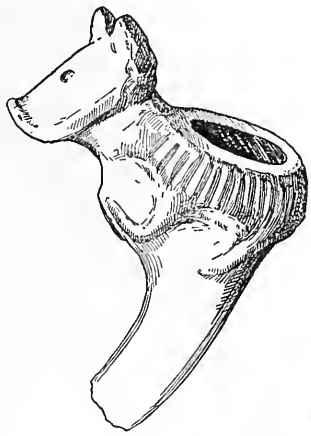

Fig. 120.

IROQUOIS POTTERY PIPE.

Honeoye Falls, New York.

Cat. No. 31497, U.S.N.M. Collected by William M. Locke.

On the bowl of one of these pottery pipes was modeled a panther's head facing to the right. Others have been found with heads facing from the smoker, and a singular specimen was discovered representing the caricature of a human head and face, the mouth of which is drawn to one side, the eyes closed, and the side of one jaw badly swollen as if from toothache.

BIRD PIPES.

A curious pipe of pronounced type (fig. 121) was found in a mound on the banks of the Ohio River in Allegheny County, Pennsylvania, and collected by Mr. P. Painter, which has an outline that would indicate a bird sitting upon a perch or limb. It is 5½ inches high and appears to be made of a compact black slate, which has been badly cracked by other heat than that generated in smoking it. The eyes are represented by two depressions, the feet by a knob, and, except that the head has been shaped, the rest of the body is perfectly smooth, and in cross section a parallelogram. The only tool marks visible are apparently those of a file across the top of the bowl. Pipes of this type had, as a matter of course, to be smoked with a wooden or other stem. The feet of the bird in these pipes are at times perforated for the attachment of a cord, or the knob is sufficiently shouldered to answer the same purpose, the bowl and stem openings being of like size, and drilled each one-half inch in diameter. One of these pipes (Cat. No. 32297, U.S.N.M.) was found in Onondaga County, New York.

[1] Ancient Monuments of the Mississippi Valley, p. 194.

The feathers of the bird are rudely indicated, and around the neck there is a necklace of beads carved into the stone. Mr. Boyle refers the writer to another pipe of this type in form of a dog or monkey, which was found in Ontario, having a hole for the string bored through the base of the figure. A pipe of similar type in possession of Rev. W. M. Beauchamp, from Oneida River, New York, represents a bird with topknot or comb, the wings being indicated by incised lines, the material of the pipe being black slate. A specimen in the collection of Mr. O. M. Bigelow, made also of slate, has what appears to be wings cut in regular conventional lines, though the head may as well be called a turtle as a bird. The feet of the last two pipes referred to are bored from side to side; upon the first there is on the back of the neck a heart-shaped ornament. Still another of these bird pipes from Onondaga County, New York, has upon its sides the ellipsoidal depressions so often noticed in Iroquoian pottery and stone pipes. Mr. Beauchamp suggests that these pipes were made with metallic tools. There is also in the U. S. National Museum collection (Cat. No. 32342) a cast of a most curious pipe of this type, the original of which is said to be of magnesian limestone, in shape of a dog, and is from New York, though the figure is so carved that it is possible the intention was to represent the skeleton of some animal. A beautifully executed pipe of this character, having all the characteristics of the northern specimens, made from a light brown, highly-polished stone, and upon which the wing and tail feathers are conventionally represented, is in the collection of the University of Pennsylvania, and is said to be from the coast of Florida, which is, however, so far from the known locality where these pipes are usually found as to suggest its having been lost by some white person who had obtained it in the north.

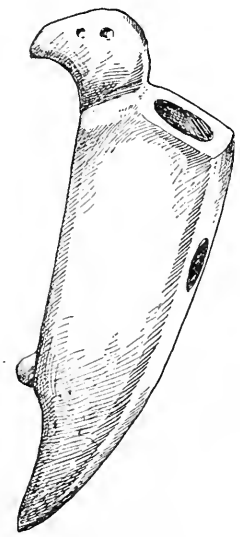

Fig. 121.
STONE BIRD PIPE.
Allegheny County, Pennsylvania.
Cat. No. 15031, U.S.N.M.
Collected by P. Painter.

Yet another pipe, apparently of this type, was found at North Carver, Plymouth County, Massachusetts, and is illustrated by Dr. Charles C. Abbott.[1]

This pipe has been attributed to the people of the Pacific coast, and is supposed to have been brought across the continent. Its characteristics and style of workmanship are strikingly like those of certain of the Pacific coast tribes, though if the specimen be compared with others of the type, there is scarcely room to question its eastern northern origin.

Mr. David Boyle illustrates a slate specimen from Victoria County, Ontario, with a well-carved beak and mouth; though by far the most curious pipes of this type are two illustrated by Mr. Boyle, from Victo-

[1] Primitive Industry, p. 324, fig. 318, Salem, 1881.

ria County, Ontario, which represent some creature climbing a pole, and are strikingly similar to the familiar toy known as a "jumping jack."

Fig. 122, from Erie County, Pennsylvania, collected by Mr. J. H. Devereux, is 5 inches in height and is clearly of this type, being made of a very imperfectly crystallized quartzite, the surface of which is so rough that it would be impossible to represent eyes or feathers, no matter what tools were employed, the bowl and stem holes being of the same size, namely, one-half inch, which is a striking feature of pipes of this type. The localities where they are found, with the one exception noted, are all contiguous to the St. Lawrence, the line of the Great Lakes, and their tributaries—all well within that of Iroquoian ethnic relationship—yet with all this in favor of their aboriginal origin, there is a very general belief in their being of European manufacture, or at least made with the implements of the European.

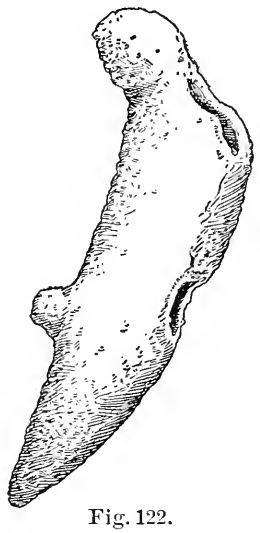

Fig. 122.
STONE BIRD PIPE.
Erie County, Pennsylvania.
Cat. No. 6829, U.S.N.M.
Collected by J. H. Devereux.

In an examination of the English trade pipe, both in Europe and America, there is found such similarity to American forms as to leave little room to doubt that there is sufficient likeness between the two to establish a common origin. The writer is, however, inclined to credit the origin of the type to the English rather than to the native American, though the Dutch and French appear early to have manufactured this pipe, and as some of the early French specimens are extremely archaic, it is possible that the Spanish may have employed it earlier than either. The readiness and cheapness with which Europeans were enabled to mold, burn, and sell the trade pipe caused it to be produced in great quantities, and the trader could afford to sell it at a price which brought it within the reach of all. When, in consequence of English cultivation, the colonists furnished an abundant supply of tobacco there was no longer difficulty in the Indian obtaining all that he wanted, for, notwithstanding the references to primitive cultivation by the natives, their fields appear to have been at best but insignificant in comparison to their actual requirements.

The pipe of the French region of influence along the banks of the St. Lawrence River differed from that of the territory dominated by the English to the east and south of them, the French pipe, as a rule, being more elaborate than that of their rivals in trade. They are more graceful in form and more artistic in design. The pipes of the French area of influence appear often to be trumpet shaped, though there are other types which have quite as distinct individuality and are scattered over a wide area. The calumet, now everywhere known also as the "peace pipe," apparently derives its name from the *chalumeau*, a musical

instrument on the order of the flageolet, called by the English "chalmy." This instrument in turn obtains its name from the same Norman word, signifying a reed.

The long voyages from Europe to America during the sixteenth and seventeenth centuries must have been monotonous in the extreme until the navigators fell in with the land, and even as early as the time of Cicero he informs us there was not a vessel where music was not employed on shipboard to relieve the monotony of the voyage.[1]

Instrumental music was as astonishing to the natives as was the noise of the guns, and must have afforded to these children of the forest remarkable entertainment as well as great astonishment. Nothing is more natural than that the original tubular pipe should have been given the flaring mouth of the metal horn of the French, which, as a pipe, would be further improved by imitating the curve of the horn.

A sort of flageolet referred to by Sir John Hawkins was a musical instrument of which, in an account of Queen Elizabeth's annual expense published by Peck in his Disiderata Curiosa, he speaks of as being "filled with air blown into them by the mouth." He alludes to several of them by name, especially the chalmy, i. e., the *Chalumeau*.[2]

The illustration given by Hawkins is that of a straight instrument, similar to a flageolet and having a flaring mouth like fig. 112.

According to McCulloh, the calumet "which is a Norman word signifying a reed, is a tobacco pipe whose stem is about 4 feet in length, sometimes round and at other times flat. It is painted and adorned with hair, porcupine quills, dyed of various colors, and the most beautiful feathers that can be procured. The bowl of the pipe is most frequently red marble, though some tribes only admit of white stone, and if it be presented to them either of black or red color will have it whitened before they smoke it. It is considered a sacred or consecrated object, and on this account is never suffered to touch the ground, being laid upon two forked sticks, stuck upright in the earth for that purpose."[3]

CALUMET AND WAMPUM.

The illustration here given (fig. 123) shows the calumet with all of its ornamentation as used by the Omahas. To dance the calumet "is to make a sacred kinship, which is done after serious consultation in which the party selected is sometimes advised against doing so, because the party to be danced for is either not worthy of it or he may himself refuse to be adopted in the dance. If all is agreeable, all parties repair to a particular place, where the pipes are placed on a forked support. Instead of the pipe bowl there is the head of a green-necked duck; on the upper side of the stem are yellowish feathers of the great owl;

[1] J. B. De La Bord and P. J. Roussieu, Essai sur La Musique, II, p. 211, Paris, 1780.

[2] Sir John Hawkins, A General History of Music, II, p. 450, London, 1776.

[3] J. H. McCulloh, Researches, p. 144, Baltimore, 1829.

next long wing feathers of the great war eagle, split and stuck on longitudinally in three places, as on an arrow shaft. At the end of these is some horsehair which has been reddened. It is wrapped on the stem and tied on with sinew and over that is fastened some of the fur of the white rabbit; near one end is the head of a woodcock * * * the nose turned toward the mouthpiece. On the pipe the eagle feathers are white, being those of a male eagle, and the pipe stem is dark blue."[1]

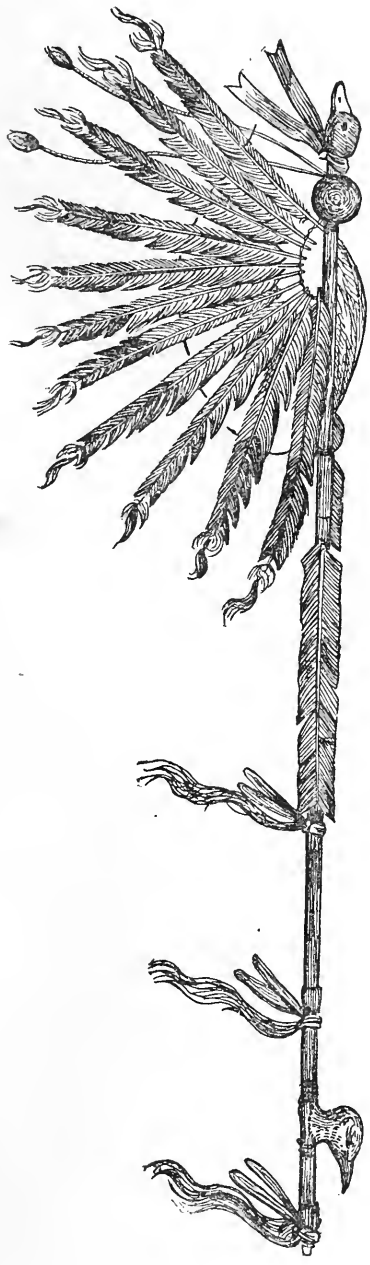

Fig. 123.

CALUMET.

After J. Owen Dorsey, Third Annual Report of the Bureau of Ethnology, p. 277.

As seen in fig. 124, "When the pipes are rested against the forked stick the head of the duck is placed next the ground. The sticks are colored with Indian red. The next morning before sunrise some of the visitors sing for the people to arise and assemble. When they begin to sing, the pipes are taken from their support and are not returned until the singing is concluded. They sing again after breakfast, a third time in the afternoon, and once more at night. This generally continues for two days, during which time the visitors are feasted. Sometimes they continue the feast for three days. The day after the feast they give and receive presents. The next day a servant of one of the principal visitors is selected to dance, one who is skillful in imitating the movements of the war eagle. The person danced for is thereafter adopted as a member of the family of the other. The Ponkas are not fully acquainted with the calumet dance. They use but one pipe; but the Omahas always have two pipes."[2] This description of the dance and of the pipe and the decorations of the pipe are similar to the earliest accounts we have. The stem of a pipe brought from the Lower Niger, Africa, by Captain Burton, which is in the collection of the British Museum, with its carefully attached tufts, resembles stems employed by American Indians.[3]

[1] J. Owen Dorsey, Omaha Sociology, Third Annual Report of the Bureau of Ethnology, p. 277, fig. 20.

[2] Idem, pp. 276–282.

[3] R. T. Pritchett, Ye Smokiana, p. 33, 1890.

The friendly offering of the pipe is evidently an ancient custom, and one referred to by many of the earliest visitors to the Atlantic Coast, though in council the pipe does not appear to have been so prominent an adjunct in the East as it was in the Valley of the Mississippi, where in all functions between the French and the natives the calumet occupied an important position.

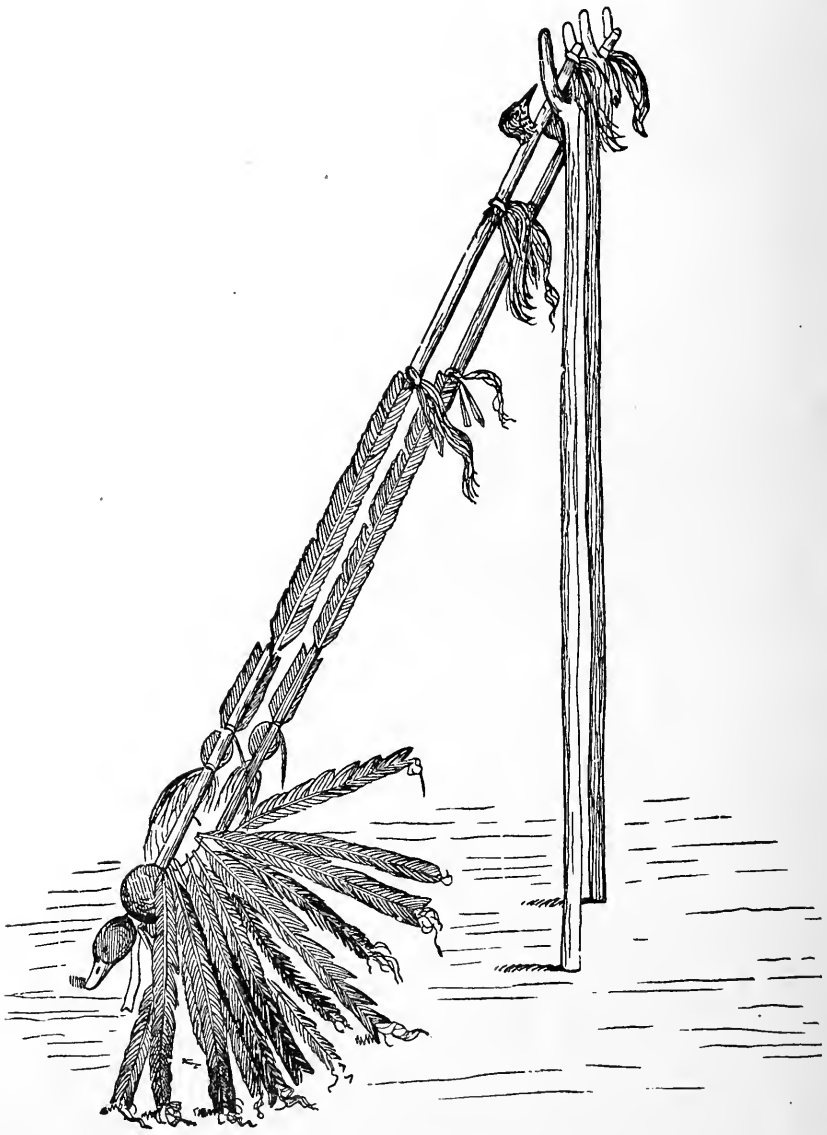

Fig. 124.

CALUMET DANCE.

After J. Owen Dorsey, Third Annual Report of the Bureau of Ethnology, p. 276.

Except by means of the rudest pictography the North American native had no means of recording events. Some method became necessary in their dealings, particularly with the whites, to evidence engagements on the one part and the other, whether affecting the tribe, as in treaties, or between individuals, as in simple contracts, memory alone being too unreliable without extraneous symbols. Among the English, in their early dealings, the "wampum belt" or necklace, consisting

originally of beads of wood or shell, and later of bands of shell, and still later of china or glass beads worked into bands, or belts, as they were commonly called, arranged in rude order, were employed, a simple example of which, represented in fig. 125, after Rev. W. M. Beauchamp, is formed of "white beads on a dark background." The long house represents the Five Nations, and the cross the French.[1]

The design of this belt, which appears to have succeeded the string of wampum, varied according to the occasion, and was intended to remind those presenting it, as well as those who received it, of what was agreed upon at the time of its presentation or exchange. Instead of the belt the French, from the earliest period of their intercourse with the natives, adopted the pipe ceremony in council, as well as in their trading, in which invariably the pipe had to be smoked before any serious business could be undertaken. In the early French records there is abundant evidence that the pipe was considered as similar to the flag of truce, and protected its bearer under all circumstances. Later the pipe and belt of wampum, especially with the great Iroquoian Confederacy of the Five and later the Six Nations, appear to have been employed in conjunction with each other. When the English were holding a

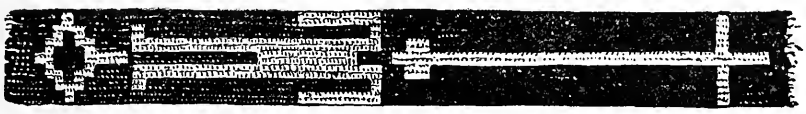

Fig. 125.

WAMPUM BELT.

After W. M. Beauchamp.

council with the natives the belt was most important, whereas if the deliberations were with the French it was the pipe that was most significant. Still later the Americans appear to have supplanted the pipe of the French with the American flag, or more often with medals stamped with the head of the President of the United States. Prior to the advent of the whites some interchange of commodities in the way of trade appears to have existed between the natives. Even during times of hostility the trader has been allowed to travel back and forth with his articles of exchange with little danger. The religious sentiment was of the crudest character among the Indians, and was little, if at all, superior to the fetish worship of the African. Hunger, climate, and variation of seasons necessitated constant movement in search of game, fish, and peltries, for the Indian had learned but the rudiments of the cultivation of soil. Expert as a hunter, able to track his prey, whether man or beast, with an accuracy surprising to the whites, he was not a herdsman. He migrated with the buffalo. Agriculture was almost an unknown art to him. His boundaries were only limited by the presence in a given area of a more powerful neighbor who was ever ready and anxious to resent a trespass on his territory or the slaughter of his game.

[1] W. M. Beauchamp, Smithsonian Report, 1879, p. 390, fig. 1.

"The name 'calumet' pipes has been given," according to Dr. Rau, "to large stone pipes, which were smoked with a stem, and are usually fashioned in imitation of a bird, mammal, or amphibian, and sometimes of the human figure. They were thus called on account of their bulk, which seemed to indicate their character as pipes of ceremony to be used on solemn occasions. It was further thought that these pipes had not been the property of individuals, but of communities, a view which does not seem altogether correct, since some have been discovered in burial mounds accompanying a single individual."[1]

This word has been so extensively used, first by the French and subsequently by the English, that, whatever its original meaning, it may be said that at present it signifies merely a pipe. There were calumets of war, of peace, of the dance, of confederacy, of the clan, of the cult, and of the individual. To-day a red Siouan catlinite rectangular pipe would more correctly represent a calumet than any other single type. Pipes were of many different sizes and of different shapes with each affiliated tribe, the larger ones usually being employed when the interests of tribe or confederacy were involved, whereas the straight tube appears to be the pipe of the dance and solemn sacred functions.

The calumet of peace, according to the French missionaries, was accepted as a flag of truce by the Indians from Lake Michigan far down the Mississippi River from 1673 for many decades. According to Morgan, "the Iroquois believed that tobacco was given to them as the means of communication with the spiritual world. By burning it they could send up their petitions with its ascending incense to the Great Spirit, and render their acknowledgments acceptably for His blessings."[2]

At the sacrifice of the white dog among the Sioux the speaker "threw leaves of tobacco into the fire from time to time, that its incense might constantly ascend during the whole of the address."[3]

The pipe among the Indians of Canada, as elsewhere, was used also upon ordinary social occasions, though there is reason to believe that the pipe ceremony always had some special significance other than that of a mere social acknowledgment or sedative. It brought luck or kept away evil spirits. It was smoked to bring game, or keep off disease, and to attract or repel the mysterious powers of their mythology. Among the Mandans, "if a woman passes between several men of the tribe who are smoking together, it is a bad omen. Should a woman recline on the ground between men who are smoking, a piece of wood is laid across her to serve as a communication between the men. When any person had a painful or diseased place, a man put his pipe upon it and smoked. On such occasion he did not swallow the smoke, as is the Indian custom, but he affirmed he could extract the disease by his

[1] Charles Rau, The Archæological Collections of the United States National Museum, p. 48.

[2] Lewis H. Morgan, League of the Iroquois, p. 164, Rochester, 1851.

[3] Idem, p. 219.

smoking, and he pretended to seize it in his hand and throw it into the fire."[1]

Wherever there are accounts of early Spanish or French travels among the American Indians we find the cross played an important part. The Spanish upon entering a town or village invariably erected a cross the first thing they did. The French missionaries, besides carrying prominently the cross as a part of their visible equipment, did their best to impress upon the natives its great importance. Consequently we find it prominent among aboriginal decorations; it is seen on the wampum belt, upon inscribed shells, on pipes, etc. Cabeça de Vaca, in his wonderful adventures among the people of the territory then called Florida, cured the natives by making the sign of the cross. In a mound within the limits of Chillicothe was found, "in a small inclosure near by, a silver cross of French origin."[2]

Upon another occasion "two silver crosses were taken in November, 1839, from a grave mound at Coosawattee, old town in Murray County, Georgia, associated with Indian implements,"[3] and other occurrences could be enumerated showing the contemporaneity of the crosses with pure savage conditions.

"In a conference to make peace a single person is never sent; there must be two; but depending upon the strength of those conferring there may be fifteen or twenty. There is, however, one who delivers the strings and belts of wampum; the others listen to his words and remind him when he forgets something. One of the ambassadors carries the peace pipe in advance to the Indians—the same as a flag of truce is to the Europeans. The respect in which the embassy is held is so great that a person disregarding it would not fail to be punished by the Great Spirit. It is only used in negotiating treaties. This pipe, called calumet by the French, usually had a head of red marble, the red color being the sign of blood. It is never sent as a peace offering without being covered with white clay or chalk. Such a pipe head is 6 to 8 inches wide and 3 inches high. The stem is of hard wood and 4 feet long, covered with beautiful bandages interwoven with white coral, in which work the Indian women endeavor to show their skill. These stems are often ornamented with porcupine quills, or green, yellow, or white feathers. Near the village of the party opposed to them the envoys commence to sing and dance, and are carried to the dwelling of the head chief, where every attention is shown them so long as the negotiations last. The opening of the proceedings is performed by the head chief of the envoys taking a whiff from the peace pipe and blowing

[1] J. Owen Dorsey, A Study of Siouan Cults, Eleventh Annual Report of the Bureau of Ethnology, p. 511.

[2] Squier and Davis, Ancient Monuments of the Mississippi Valley, p. 166, Smithsonian Contributions to Knowledge, I.

[3] Charles C. Jones, Silver Crosses from an Indian Grave-mound at Coosawattee Old Town, Murray County, Georgia, Smithsonian Report, 1881, p. 619.

to the skies and to the earth. It is then smoked in succession by the whole assembly, each person holding it with great care."[1]

Among the Indian tribes generally only the more important chiefs are considered worthy of carrying the pipe of ceremony. "Among the Crees the calumet is borne by a man who is solemnly elected to the office and who has to pay rather dearly for the honor, from 15 to 20 horses being the usual fee which each pipe bearer presents to his predecessor on receiving the insignia of office; these, however, are of considerable intrinsic value. They include a bearskin, on which the pipestem rests when uncovered; a beautiful painted skin tent, in which he is expected to reside; a medicine rattle of singular value; a food bowl, and other articles so numerous that two horses are needed to carry them."[2]

Among the Ojibways "next in importance to the war chief was the pipe bearer, who officiated in all public councils."[3]

On April 7, 1536, within one mile of Tadousac, below the mouth of the Saguenay, Lescarbot says: "Having landed, we went to the cabin of their sagamo, called Anedabijou, where we found him with eighty or one hundred of his companions 'qui fasait tabagio,' which means feasting."[4] He says this savage commenced to take petun (tobacco) "and gave it to the Sieur Du Pont and to me and to some other sagamos near him, and having taken a good smoke began his speech (id). From this time on the French advanced up the St. Lawrence, or River of France, as they called it, until they reached Lake Ontario, and from thence to Erie, and each year went further as they became acquainted with the Indians of the more distant parts until Marquette and Joliet, in 1673, reached the Mississippi near Lake Michigan. De Soto landed in Florida in May, 1539, and reached the banks of the Lower Mississippi in 1541. La Salle came into the mouth of the Mississippi in 1682 and took posses sion in the name of the King of France. The Chevalier de Tonti had gone down the Mississippi River as far as Balize in 1685 to meet La Salle, whom he missed. Iberville and Bienville, in 1699, entered the Mississippi and went up it as far as the mouth of the Red River and the next year met Tonti 50 miles from the mouth. He had come from Canada down the river, being the second trip which he had made."[5]

MOUND PIPES.

Throughout a large portion of the United States earthworks are found of various kinds, attributed to different periods of antiquity. The mounds and embankments are especially numerous in the State of

[1] Loskiel, Geschichte der Mission der Evangelischer Brüdern, p. 201, Barby, 1789.
[2] J. G. Wood, The Natural History of Man, p. 682, London, 1870.
[3] William W. Warren, Minnesota Historical Collections, V, p. 318.
[4] Marc Lescarbot, Histoire de la Nouvelle France, Book III, p. 288, Paris, 1608.
[5] Charles Gayare, Louisiana, its Colonial History and Romance, New York, 1851.

Ohio, where there have been discovered aboriginal remains of the most interesting character. The controversy as to the origin of these mounds and of the people who built them and of their age is one most difficult of satisfactory solution. They are by no means confined to the United States, and as to whether the people who constructed them continued to do so up to a comparatively modern date or whether they are all of great antiquity is and has long been a matter of dispute among archæologists. The remains found in the mounds consequently have been by many attributed to a people of great antiquity, antedating the present Indian race, and many scientific papers have been written in support of this theory. Yet there are those living who have witnessed the building of mounds, and the extensive studies of Prof. Cyrus Thomas, of the Bureau of American Ethnology, induce him to believe that the Cherokees were mound-builders up to and since the arrival of the whites on the continent. Many articles of modern make, undoubtedly the handiwork of the white people, have been found buried in the mounds. Such things are declared by some to be intrusive or secondary burials. They are alleged by others to have been deposited therein at the time of the construction of the tumuli. With hardly an exception all earthworks of every description found in the interior of the country are attributed to this wonderful ancient race of aborigines. Though the very country where mounds are most abundant was the battleground of French, English, and Indians for many decades in the struggles waged between the English and French for the possession of the Indian trade, some of these supposed aboriginal earthworks may well have been the fortified camps of one or other of the white invaders. The mounds are found almost invariably along the lines of the great rivers of the interior, due, presumably, to the fact that these rivers were the lines of least resistance to the free communication from one point to the other, and consequently were the trade routes of the interior, whether of white man or Indian. It has been said of the mound-builders that they were very numerous throughout the Mississippi Valley. "They were a people entirely distinct from the North American Indian. The pipes are often elaborately and beautifully carved of a great variety of stones, generally of rather a soft character, and were apparently held in very high estimation, perhaps almost sacred. In the Upper Mississippi Valley they are of the same general type, having the flat curved base, which is perforated to serve as a stem. They represent a variety of forms, among them two said to distinctly represent the elephant."[1]

The best known work on the mound-builders' pipes is that of Messrs. E. G. Squier and E. H. Davis in the Ancient Monuments of the Mississippi Valley, contained in the first volume of the Smithsonian Contributions to Knowledge, which described explorations of these remains

[1] Extract from President Pratt's Report, Davenport Academy of Natural Sciences, American Naturalist, XIII, p. 684.

through a period of years. In this publication there are illustrations of the objects discovered, and nothing is more striking than the pipes. These are quite numerous, and represent not only man, but many of the mammals, birds, and even reptiles, and, indeed, many of them are executed with skill and striking artistic effect, though there may be room for doubt whether the figures represent as many different species as some have believed. In intricacy of design, in artistic concept, in skill of execution, in truthfulness to nature, it must be admitted that the work of the modern Indian on his pipe, when compared with that of the mound-builder, would demonstrate that the historic Indian was the equal of the supposed earlier race. There is no doubt whatever that pipe-carving constitutes the best example of aboriginal art, though how far it was influenced by the whites is a question subject to difference of opinion. In view of the fact, which is sustained by all writers, colonial and modern, that to the whole Indian race the pipe was an object used in religious functions, for medicinal purposes, in tribal treaties, as well as upon all social occasions, it is natural to see artistic influences developed in the pipe; this is more especially to be expected when we know that the totem of clan or tribe ranked as high as anything could in the Indian imagination. Yet it is quite another and more doubtful proposition to attribute to the Indian the amount of artistic skill evidenced in the forms of the mound pipes. These pipes are composed of stones, the stem holes being extremely small and perfectly straight, and leave but little doubt that the pipes were smoked without a stem other than that comprised in the stone itself. It will be appreciated how numerous the totems of a tribe were when we compare the known clans among pueblo tribes with the figures represented upon the mound pipes, which were probably totemic. The animal kingdom represented among the totems of these people includes the ant, antelope, badger, bear, bluebird, buffalo, chaparal-cock, coyote, crane, crow, deer, dove, duck; eagle, frog, goose, gopher, hawk, humming bird, lizard, martin, mole, mountain lion, parrot, snake, swallow, turkey, and wolf, not to mention the many totems representing inanimate objects, such as arrows, axes, calabash, coral, corn, cottonwood, earth, feather, flower, grass, ivy oak, piñon, shell, stone, tobacco, and water willow.[1]

The largest number of mound pipes ever discovered were found in a mound near Chillicothe, Ohio, by Squier and Davis, designated by them as Mound No. 8, where about two hundred were brought to light. This mound is small in size, and exhibits in its structure nothing remarkable.

"The bowls of most of the pipes are carved in miniature figures of animals, birds, reptiles, etc. All of them are executed with strict fidelity to nature and with exquisite skill. The otter is shown in characteristic attitude, holding a fish in his mouth; the heron also holds a fish, the hawk grasps a small bird in its talons, which it tears with its

[1] F. W. Hodge, Pueblo Clan Names, American Anthropologist, October, 1896, p. 345.

beak. The panther, the bear, the wolf, the beaver, the otter, the squirrel, the raccoon, the hawk, the heron, crow, swallow, buzzard, paroquet, toucan, and other indigenous and southern birds, the turtle, the frog, toad, rattlesnake, etc., are recognized at first glance. But the most interesting and valuable in the list are a number of sculptured heads, no doubt faithfully representing the predominant physical features of the ancient people by whom they were made."[1]

These views have been generally accepted since the publication of this great monograph, which represented the most extensive excavation undertaken by any archæologist up to its date, though other and more extensive investigations have since been made in these and in other mounds. The accepted theory has for a long period been that the American Indian lavished his utmost skill upon the construction and decoration of his pipe—those of stone as well as those of pottery. Of the latter, Sir John Lubbock has remarked that, "Among the most characteristic specimens of ancient American pottery are the pipes. Many are spirited representations of animals, such as the beaver, otter, etc."[2]

It does not appear to have been considered remarkable that the carving of pipes with such great skill should be practically the only example of American Indian art; and it may be questioned if the small size of the pipes, thereby enabling them to be carried by their owners, sufficiently explains why pipes alone show this skill, fine carving being almost, if not entirely, unknown in other aboriginal stone objects from the area where these pipes are most often found.

It may with pertinence be asked why do we not find in the mounds other images of stone finished with the skill of the mound pipe if they are of Indian origin? The religious or superstitious feeling of the seventeenth century would draw the line at idol making, whereas pipe manufacture would be a legitimate occupation. That the people of the mound-pipe region possessed idols is a historic fact, for Dablon, the Jesuit missionary (about 1670–1672) at Fox River, found an Indian idol on the bank similar to that which Dollier and Gallinée found at Detroit, being merely a rock bearing some resemblance to a man and hideously painted[3] which they threw into the river; the rude possession of those people of whom Le Jeune said, in 1633, "Unhappy infidels, who spend their life in smoke and their eternity in flames."[4]

Mound pipes vary greatly in their finish, yet they are of a distinct type from all other pipes, many of their bowl cavities being small in proportion to their exterior diameter; yet there are exceptions to the rule. The specimens in the Smithsonian collection vary in length from 2 to 5 inches, in height from 1 to 2 inches, and in width from $1\frac{1}{4}$ to $1\frac{1}{2}$ inches.

[1] Squier and Davis, Ancient Monuments of the Mississippi Valley, p. 152, 1848.
[2] Sir John Lubbock, Prehistoric Times, p. 258, New York, 1872.
[3] Francis Parkman, The Jesuits in America, p. 35, Boston, 1895.
[4] Idem, p. 36, Boston, 1895.

The bases of them all appear to curve longitudinally; the upper side of the platform composing the base usually presents a convex surface from side to side, though at times it is perfectly flat, or, rarely, it may be found showing a slightly concave surface. The simplest form of this pipe resembles in outline that of the lip ornament of the Eskimo, the bowl being urn-shaped, with a more or less pronounced flaring top, which would indicate a probable acquaintance with pottery. The tops of the bowls and their exterior rims are at times decorated with a row of dots, or it may be an encircling straight line or lines. The interiors of bowls are, with rare exceptions, of great uniformity, their exteriors varying from specimens with perfectly smooth surfaces to those in imitation of numerous members of the animal kingdom, including man and the elephant.

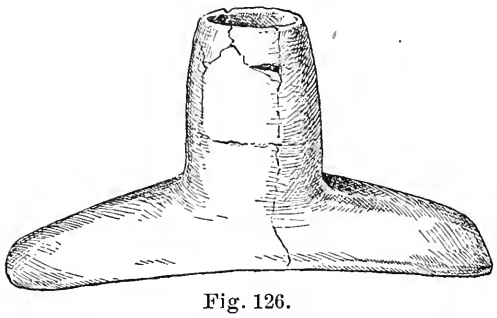

Fig. 126.
MOUND PIPE.
Clark County, Ohio.
Cat. No. 42667, U.S.N.M. Collected by G. L. Febiger.

The most simple specimen of the typical mound pipe is seen in fig. 126, found in a mound in Clark County, Ohio, collected by G. L. Febiger, United States Army, and is composed of a soft white stone—possibly limestone. It is 4 inches long, with a height of 2 inches, the base being $1\frac{7}{8}$ inches broad. The interior of the bowl has a uniform diameter of seven-eighths of an inch its whole depth, and appears to be bored by means of a tubular drill, though the stem seems to have been bored by means of a solid drill, the hole being one-eighth of an inch in diameter. These proportions are practically constant in the mound pipes. Though this pipe has been badly broken, its several pieces have been preserved and carefully glued in place. The specimen is typical and simple, entirely without ornament, its surface having been brought to a uniform smoothness, though the marks of a file on the bowl and stem are in places almost too distinct to be mistaken. These marks consist of a series of lines of equal length on apparently flat surfaces, all equidistant, which the writer has been unable to imitate in any way except by means of the metal file, various kinds of sandstone and quartzite being tried with unsatisfactory results.

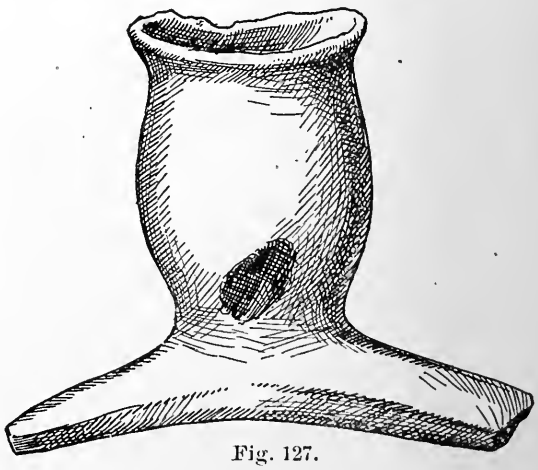

Fig. 127.
MOUND PIPE.
Marietta, Ohio.
Cat. No. 5481, U.S.N.M. Collected by J. Varden.

A dark green steatite (fig. 127) from Marietta, Ohio, collected by

Mr. J. Varden, is 2⅛ inches long, with part of the base broken off. It is 1½ inches high and has a width of three-fourths of an inch. Though the base of this pipe is slightly more convex than the preceding figure and the bowl more urn-shaped, the type remains the same, the bowl cavity being of uniform size its whole depth, though the stem hole is slightly in excess of that of the preceding figure. The walls of the bowl of this pipe are extremely thin, the bowl cavity being ellipsoidal, rather than cylindrical. The file marks on this pipe are also quite as distinct as they are on the preceding specimen. McLean illustrates a similar pipe as of the genuine mound-builder type.[1]

There was also found in a mound in Laporte County, Indiana, one of the curved-base urn-bowled pipes, and in the same mound with a single skeleton were two copper needles, a copper chisel, four flints, and some pottery. A very similar specimen is in the Davenport Academy of Sciences, which was found in Calhoun County, Illinois, and quite recently a very perfect specimen, made apparently of a mottled gray and white stone, was taken from a mound near Evart, Michigan, and is the property of Miss Helen A. Hepburn.

Mr. John G. Henderson found a similar pipe in a mound at Naples, Illinois, near the Illinois River, made of a white stone, and from the same mound were taken two copper celts, one of which weighed 7½ pounds,[2] and another is reported from Davenport, Scott County, Iowa.[3]

Mr. Warren K. Morehead excavated an unfinished catlinite pipe of this type with the curved base characteristics at Fort Ancient, Ohio, which shows distinctly the process of manufacturing indurated clay pipes, which was by pecking or battering the stone with a stone hammer, as was demonstrably the process of working those stones not readily shaped by chipping.[4] One was taken from a mound at Toolsboro, Louisa County, Iowa, made of "a soft whitish stone,"[5] and yet another unfinished specimen is in the U. S. National Museum (Cat. No. 58650) from Sauk County, Wisconsin, which adds materially to our knowledge of the process of manufacturing these pipes, the surface being apparently ground with sand, or a sandstone, as is evidenced by the striæ left by the tool, which are yet discernible. The bowl of this pipe has, however, been excavated by a solid drill used with sand. The base is broken in process of manufacture, owing to which the bowl has been finished less than the necessary depth, which accounts for its being discarded. The base also is flat, though such specimens are not unusual, Mr. Gerard Fowke having found one in a mound in Page County, Virginia.[6] Moorehead records one from the Hopewell group of mounds in Ohio.[7]

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[1] J. P. McLean, The Mound-Builders, p. 165, fig. 38, Cincinnati, 1879.

[2] Smithsonian Report, 1882, p. 697, fig. 14*b*.

[3] W. H. Pratt, Proceedings, Davenport Academy of Natural Sciences, I, p. 117.

[4] Fort Ancient, p. 110, plate XXXIII, Cincinnati.

[5] W. H. Pratt, Proceedings, Davenport Academy of Natural Sciences, I, p. 111.

[6] Archæological Investigations of the James and Potomac Valleys, fig. 16, p. 56.

[7] Fort Ancient, p. 207.

Squier and Davis instance a unique curved-base pipe, upon the upper surface of the base of which are a number of small holes. Among mound pipes many are found the bowls of which are spool-shaped on a curved base.[1]

Fowke figures one from Williamsville, Virginia.[2] Squier and Davis also record a specimen from a mound on the east bank of the Scioto River, found in association with a thin copper plate.[3]

One of pipestone is recorded from Buffalo Township, Iowa, by Mr. S. Tiffany.[4]

The fact of these pipes being buried with human bodies has been thought to prove that they were invested with religious significance, though the same argument would equally apply to the many other objects found in aboriginal graves, which were the usual receptacles of the possessions of the dead—a custom by no means confined to America and applies to most countries with equal force. In mound No. 8 Squier and Davis found nearly 200 pipes, many of which "were much broken up, some of them calcined by the heat, which had been sufficiently strong to melt copper."[5]

The figures of some of these pipes of animal form appear to have had artificial eyes, most of which were destroyed by fire; a pearl, however, which formed the eye of one, yet remains.[6]

A similar occurrence is noted of a bird pipe made of pipe stone found in a mound at Toolsboro, Iowa, with pearl eyes.[7]

Pearls are found in some of the unios of the Mississippi. These pipes were originally supposed to be very hard and of a porphyritic character, but upon investigation were discovered to be either a siliceous clay slate, an argillaceous ironstone, a pearly brown ferruginous chlorite, calcareous marl, or marly limestone.[8]

In the collection of the American Museum of Natural History in New York City there are twelve or thirteen specimens and fragments of the Squier and Davis pipes from Mound City, Ohio. Mr. A. E. Douglass also has two very perfect ones of the Squier and Davis find. There is in these collections enough material to demonstrate that the technical work on these curved base pipes, which have caused so much wonder for the last forty years, is of a very superior order. The artistic skill of those making them is evidenced in every line of the pipes and of their ornamentation. The bowls have been perforated by means of hollow metal drill points and the small stem holes by solid points; the scales on the frogs and the feathers of the birds are cut with an accuracy and

[1] Ancient Monuments of the Mississippi Valley, p. 30.

[2] Archæological Investigations of the James and Potomac Valleys, p. 30, fig. 5.

[3] Ancient Monuments of the Mississippi Valley, p. 179, fig. 68.

[4] W. H. Pratt, Proceedings, Davenport Academy of Natural Sciences, I, p. 113, plate IV.

[5] Ancient Monuments of the Mississippi Valley, p. 152.

[6] Edward T. Stevens, Flint Chips, p. 425, fig. 48, London, 1870.

[7] W. H. Pratt, Proceedings, Davenport Academy of Natural Sciences, I, p. 108.

[8] Edward T. Stevens, Flint Chips, p. 414, London, 1870.

delicacy of detail in thin, sharp lines which appears to indicate the use of sharp-pointed tools. The head of an Indian, the bowl of which is drilled from the top of the head down by means of a thin tubular drill, the platform being broken off on both sides, is a well executed likeness of an American Indian, while certain incised lines upon his face are probably intended to represent the lines of paint or tattooing. These lines are cut in sharply and deeply, and it is an artistic production. A few of the surface lines of this pipe have first been incised and subsequently partially obliterated by grinding or polishing, but yet remains sufficiently clear to suggest the use of the steel file. The whole effect of this head is calculated to impress one who carefully examines it with the idea that it is the work of a skillful European carver.

One of these specimens in the Museum of Natural History is a curved base pipe having upon the convexity of the base an animal in a sitting or squatting position, but whether bear, wolf, dog, or mouse it would be impossible to say. The perforation for the eyes goes from side to side, and there can be little doubt it was intended to insert artificial eyes of some sort. A peculiarity of this specimen is that below the eyes there are two small holes bored, one on each side of the upper part of the face, that are so small, indeed, and sharply cut as to indicate the employment of a steel point as fine as a fine needle. A splinter of stone could not have made the hole, a point of native copper wire could scarcely do it, the small size and clear cutting being probably owing to an implement of European manufacture. There are four or five of what have been and are supposed to be file marks upon the top of the head of this animal directly between the ears, two of which lines, however, could not be made with the flat part of the file. There are two frog pipes of the mound type in the Douglass collection, one of which has eyes which protrude; the other has eyes bored through from side to side for the insertion of artificial objects. The scales of the frogs it would be possible to cut with a sharp stone point, but the fine lines look as though cut by sharp metal tools.

One of the pipes having an urn-shaped bowl and another representing an animal, possibly an otter or beaver, arising from the water, has a number of sharp file marks of regular length and equidistant, which it would be difficult if not impossible to imitate without steel tools.

The Douglass collection contains two of the original Squier and Davis find from Mound City, near Chillicothe, Ohio, one made apparently of an oolitic limestone, the other of a brownish stone of medium hardness, both representing birds. The bowls of these specimens have been bored, as the others appear to have been, by means of tubular drills, and the irregularity of shape of one of the bowls, the cross section of which somewhat resembles an irregular circle, was probably made with a loose drill point, which would not inconvenience one working with strap or pump drill, but would be extremely awkward to make with a shaft revolved on the thigh or between the palms of the hands.

"Four miles north of Chillicothe, Ohio, there lies, close to the Ohio River, an embankment of earth somewhat in the shape of a square with strongly rounded angles, and inclosing an area of 13 acres, over which twenty-three mounds are scattered without much regularity. This work has been called Mound City."[1]

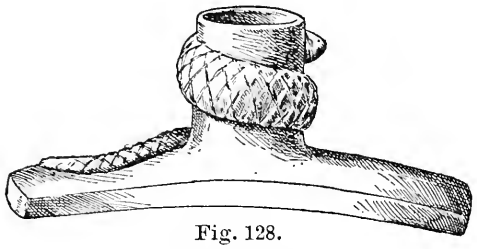

Fig. 128.

MOUND SNAKE PIPE.

Mound City, Ohio.

Cast, Cat. No. 7231, U.S.N.M. Collected by Squier and Davis.

Squier and Davis say that the pipes found at Mound City "were intermixed with much ashes, pearl and shell beads, disks, tubes, etc., and a number of other ornaments of copper covered with silver."[2]

It were, indeed, difficult to conceive a more graceful design than fig. 128 represents. It is one of the casts of a pipe collected by Squier and Davis in Mound No. 8, at Mound City, Ohio. The cast is 3 inches long, the bowl having an interior diameter of three-fourths of an inch, the pipe standing $1\frac{3}{8}$ inches in height. The snake is curled around the bowl with his tail extending along the base, the markings of the snake being represented by incised lines forming diamonds.

The Marquis de Nadaillac illustrates a pipe from a mound in Mercer County, Illinois, made from an indurated clay, on which the snake is wound three times around the bowl.[3]

Another of the mound type of pipes is shown in fig. 129, collected by Squier and Davis in Mound No. 8, which in size varies little from the preceding specimen. The frog sits in typical position as though ready to jump, the legs being well shown, as are the toes of the feet, those in front being well turned in and three toes on each foot. The eyes were depressed; the scales, scarcely one-sixteenth of an inch in diameter, are formed by incised lines all over the body, having apparently been cut with a sharp-pointed tool. A somewhat similar frog pipe found in a mound with one which was plain is illustrated by Mr. R. J. Farquharson.[4]

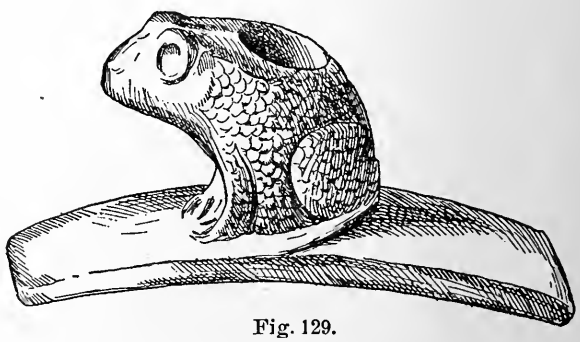

Fig. 129.

MOUND FROG PIPE.

Mound City, Ohio.

Cast, Cat. No. 7230, U.S.N.M. Collected by Squier and Davis.

[1] Charles Rau, Archæological Collections of the Smithsonian Institution, p. 46.

[2] Ancient Monuments of the Mississippi Valley, pp. 151, 152.

[3] Les Pipes et le Tabac, Matériaux pour l'Histoire Primitire et Naturelle de l'Homme, p. 498, November, 1885.

[4] Proceedings, Davenport Academy of Natural Sciences, I, p. 119, plate IV, fig. 5.

Two frog pipes are referred to in the Great Bragge collection, one from Kentucky and the other from the Ohio River, of steatite and gray limestone, respectively,[1] either of which localities is well within the mound pipe area.

Fig. 130 is a cast of a catlinite mound pipe found on the banks of the Illinois River, near Naples, Illinois, described by Mr. J. G. Henderson. It represents the common hard-shelled turtle of the American rivers. The turtle is upon a short, round pedestal which rises from the curved base. In one of the eye holes there yet remains a copper bead representing the eyeball, the other being lost. The head is slightly extended from the shell; the tail is lying against the body, the feet being folded close to the body in front; the stem hole being one eighth of an inch, and that of the bowl one-half inch in diameter. This specimen is $3\frac{1}{4}$ inches, with a stem width of $1\frac{3}{8}$ inches.

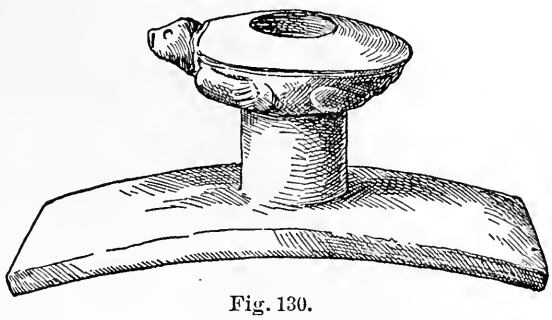

Fig. 130.
MOUND TURTLE PIPE.
Naples, Illinois.
Cast, Cat. No. 11609, U.S.N.M. Collected by J. G. Henderson.

Fig. 131, also one of the Squier and Davis Mound No. 8 pipes, is probably the best known of all this type. It is of about the same dimension as are the other pipes of this type and represents a typical Indian head. The eyes, nose, and mouth are well modeled and the ears are distinct. There is a knob on the top of the head and two back of the ears, the significance of which it is difficult to explain, unless it be to designate the hair tied up. This head sits well down on the base and faces the smoker, as is almost invariably the case in pipes of this type unless the stem has been broken, in which event use is made of the opposite end. In some few instances an exception to the rule is observed in figures of birds facing the side of the stem and in one instance an animal is represented as looking back over its shoulder. From top to bottom of the bases or platforms of these pipes is often less than one-fourth of an inch. To bore a one-eighth inch hole through this requires great care. This Indian-head pipe was found in the altar of the mound.[2]

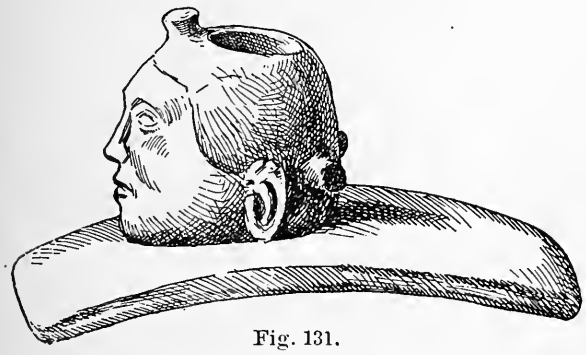

Fig. 131.
MOUND INDIAN HEAD PIPE.
Mound City, Ohio.
Cast, Cat. No. 7212, U.S.N.M. Collected by Squier and Davis.

[1] Bibliotheca Nicotiana, p. 155, Birmingham, 1880.

[2] Squier and Davis, Ancient Monuments of the Mississippi Valley, fig. 145.

Two other pipes were also found by Squier and Davis representing human heads. Whether the cowl-like appearance of this head is intended to represent some head covering or the hair is difficult to determine.

The Indian is not usually represented with head covering, though subsequent to the arrival of the whites they did at times wear caps purchased from the Europeans, especially those Indians who came in contact with the French.

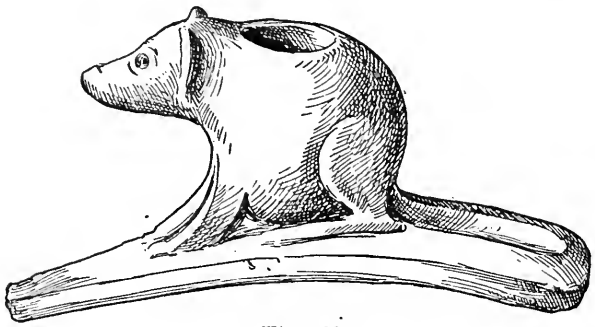

Fig. 132.
MOUND RACCOON PIPE.
Naples, Illinois.
Cast, Cat. No. 11610, U.S.N.M. Collected by J. G. Henderson.

Thomas Campanius Holm, referring to experiences in New Sweden about 1645, says: "While my father and grandfather lived among them some Swedish women had undertaken to make some small caps out of all kinds of old clothes, at the top of which they fixed a tassel of various colors, which they made of different colored rags, which they unraveled and mixed together. Those caps pleased the Indians extremely and they gave good prices for them in their money."[1]

Mr. J. G. Henderson has also figured a pipe from a mound near Naples, Illinois (fig. 132), which he believes represents a raccoon, the fore and hind legs of which are well carved. The nose is quite sharp, the tail lies flat and straight out along the base, the eyes are close together, and the beast appears to resemble in the cast a mouse quite as much as it does a raccoon, the position being more typical of that usually assumed by the mouse than it is of that of the raccoon, though it may be that Mr. Henderson is correct, for he says that in the original every feature of the animal is perfect, including the bars on the tail and face.[2] There is little doubt that animals and birds represented on these pipes are often impossible of identification. This pipe is said to be polished as smooth as glass and to be made of a very hard stone.

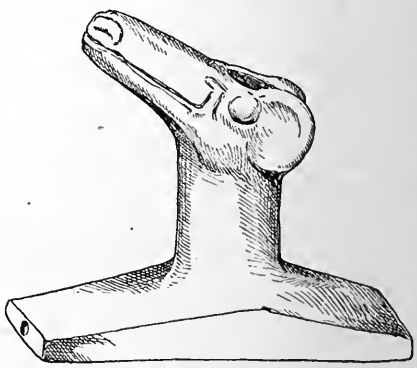

Fig. 133.
MOUND PIPE.
Mound City, Ohio.
Cast, Cat. No. 7216, U.S.N.M. Collected by Squier and Davis.

There are many other animal forms which have been found in these mound types, including the beaver, bear, panther, and lizard. Others, however, it can not be denied, are most difficult to determine. In one

[1] A short Description of the Province of New Sweden, now called by the English, Pennsylvania in America, p. 131, Philadelphia, 1834.

[2] Smithsonian Report, 1882, p. 689.

instance what is thought to resemble a groundhog may, with equal reason, be said to be a ground squirrel. A fox can not be distinguished from a wolf; and many animals represented upon pipes of this type have been declared by naturalists to resemble no well-defined genus with which they were acquainted.

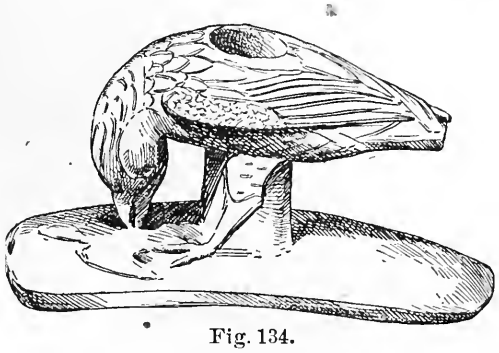

Fig. 134.
MOUND BIRD PIPE.
Mound City, Ohio.
Cast, Cat. No. 7232, U.S.N.M. Collected by Squier and Davis.

The original of a light gray cast in the U. S. National Museum (fig. 133) is of the mound type, and was also found in Mound No. 8. It is $3\frac{1}{4}$ inches long and $2\frac{5}{8}$ inches high, with eyes carved in relief, the nostrils quite distinct, and the mouth represented by a long incised line. The curves back of the head may be intended to represent either ears or horns. This figure has been referred to as "a spirited head of the elk, though not minutely accurate."[1] Justice requires that we should say that this head resembles as much a sheep or horse as it does that of an elk or any of the deer family.

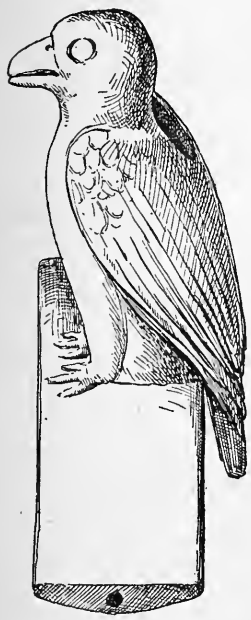

Fig. 135.
MOUND EAGLE PIPE.
Naples, Illinois.
Cast, Cat. No. 31478, U.S.N.M.
Collected by J. G. Henderson.

Dr. E. A. Barber has illustrated a somewhat similar pipe from Prairie du Chien, Wisconsin, which he suggests may possibly represent the mountain sheep or goat. In this case the animal faces from the smoker. This pipe is now in the Douglass collection,[2] and has had the front part of the stem broken. An inspection of the original suggests that the supposed horns are more likely intended for ears. Hon. Horace Beach, who collected the pipe, termed it "the dog pipe."

Fig. 134 is another of the Mound No. 8 specimens from Mound City, Ohio, and is $4\frac{1}{8}$ inches long with height of 2 inches. The bird is evidently feeding, though it is impossible to say whether it is an eagle or crow. The feathers are carefully carved on the tail, wings, and body, and while it can not be said that the work could not be done with a stone point, it looks as though the tool used was a metal one.

The cast of an unusual pipe from a mound near Naples, Illinois, in Scott County, is shown in fig. 135, collected by Judge John G. Henderson, of Winchester, Illinois. According to Dr. Charles Rau, "it is the finest mound pipe thus far known." It doubtless represents a hawk or

[1] Ancient Monuments of the Mississippi Valley, p. 257.
[2] American Naturalist, XVI, p. 279, fig. 19.

eagle; its great peculiarity being that the bird faces to the side rather than toward the smoker. It is said not to have been exposed to the heat of the fire, as so many mound pipes have. "A pipe shaped like an eagle, one of the real mound builder's bird-shaped pipes, was taken from the stone inclosure midway between Savannah and Fulton, Illinois. Its workmanship was perfect and its shape artistic to a high degree."[1]

The eagle and the hawk are both prominent among the totems of American Indians, and are frequently found on mound pipes, though it must be admitted that birds are more difficult to identify than animals. There were found in the mound near Naples, Illinois, along with the raccoon pipe and turtle pipe, objects of copper, "and a remarkable specimen which may be designated a sun symbol—a white stone, perfectly round, $12\frac{2}{3}$ inches in diameter, about half an inch thick in the middle and 1 inch upon the edges, slightly concave upon one side and having upon the other a figure of a human hand."[2]

The mound pipe is usually found associated with copper implements. The file marks observable so often upon those parts of the surface which are most difficult to polish indicate the use of steel implements, and the presence of silver makes one suspect the influence of the white man. Judge Henderson's "perfectly round" disk is one of the strongest arguments in favor of European manufacture, for perfectly round disks do not appear to belong to aboriginal art of the northern continent, and when the delicate finish and artistic merit of the mound pipe is considered there is left the conviction that the European is the author of the type.

In many museums are found objects of bone made by the Eastern Eskimo, many of them carved and etched with great skill; but, as has been noted by Prof. Otis T. Mason, all fine etching on bone or ivory, such as the work of these Eskimo, is in proportion to their contact with Europeans. From the older graves there has been revealed no etching, and the carvings he finds are rude in proportion to their removal from the white man's influence.

The Davenport Academy of Natural Sciences has two pipes said to have been found in a mound in Muscatine County, Iowa, by some Germans, one of which represents a bear and the other an elephant. Both are said to be out of proportion,[3] as one is too tall and the other too slender. There is a second elephant pipe possessed by the Davenport Academy, from Louisa County, which was found in a mound in 1888.[4]

An illustration of one of the pipes is given after a photograph (fig. 136). In both pipes the tail is said to be well-developed. There was a criticism of the animal carvings from the mounds of the Mississippi

[1] James Shaw, The Mound Builders in the Rock River Valley (Illinois), Smithsonian Report, 1877, p. 256.

[2] Smithsonian Report, 1882, p. 694.

[3] Proceedings, Davenport Academy of Natural Sciences, II, p. 348, figs. 22, 23.

[4] Idem, IV, p. 271, fig. 2.

Valley, by Mr. Henry W. Henshaw, from the standpoint of the naturalist, based chiefly on the famous Squier and Davis collection, in which he sums up his conclusions under four different heads as follows:

First. That among the carvings from the mounds which can be identified, there are no representations of birds or animals not indigenous to the Mississippi Valley, and consequently that the theories of origin for the mound builders suggested by the presence in the mounds of carvings of supposed foreign animals are without basis.

Second. That a large majority of the carvings, instead of being, as assumed, exact likenesses from nature, possess in reality only the most general resemblance to the birds and animals of the region which they were doubtless intended to represent.

Third. That there is no reason for believing that the masks and sculptures of human faces are more correct likenesses than are the animal carvings.

Fourth. That the state of art culture reached by the mound builders, as illustrated by their carvings, has been greatly overestimated.[1]

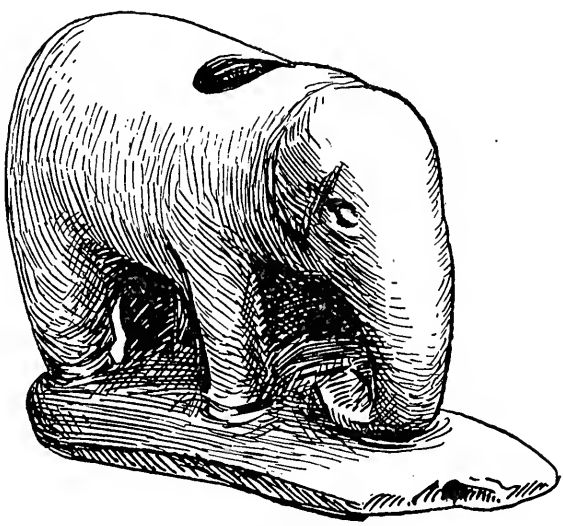

Fig. 136.

MOUND ELEPHANT PIPE.

After a photograph. Original in collection of the Davenport Academy of Natural Sciences.

These views can hardly be successfully combated by anyone at all familiar with the illustrations of the mound pipes unless it be contended that the illustrations themselves are defective. The casts of these famous pipes, a complete set of which is in the U. S. National Museum, suggest that the illustrations have done full justice to the objects represented. Mr. Henshaw in his criticism questioning the genuineness of the elephant pipes appears to have fallen into error in saying that the tails are absent in each of these pipes, and his reference from a naturalist's standpoint naturally ignores the technological consideration of the subject, as well as the contemporaneity of metal in the mounds, especially copper, and also the many asserted discoveries of objects of undeniably European manufacture, such as an implement of copper being found in the same mound with one of these elephant pipes. All of which are of course important bits of evidence in any summary going to make up a verdict as to the artistic ability of those who made the pipes.

While concurring entirely with Henshaw's summary, under the four heads, and while considering the same conclusively proven in favor of

[1] Animal Carvings from the Mounds of the Mississippi Valley, Second Annual Report of the Bureau of Ethnology, p. 166.

his contention, the writer, with due deference to the opinions of the many who may disagree with his conclusions, would add: That the age of copper implements and their use by the American Indians does not appear to have been sufficiently studied to demonstrate to what extent they had been employed prior to the advent of the whites, nor for how long. The tool marks on objects and technology generally of the mound builders appears to have been little considered; the finding of worked silver in mound No. 8, and a silver cross either in this mound or in one near it, as recorded by Squier and Davis, and the finding so commonly in remains of the mound period objects of European manufacture, all raise the suspicion, almost amounting to conviction, that the pipes were contemporaneous with the early whites, probably the French. The two elephants suggest, of course, an acquaintance with the animal, and unless the Indian can be shown to have known the beast before the European invasion, which with our present evidence seems improbable, the natural inference would be that this knowledge came from the whites, who we do know were well acquainted with the elephant, and as a consequence that the pipes were made after the European invasion of the country. The criticism of Henshaw caused quite a discussion in the archæologic world, though the fact remains that "the artistic merits of the mound builder's pipes have in some cases been overrated."[1]

Dr. Wilson, although suggesting this view, contends "that the objects wrought by their artistic skill reveal no less certainly their familiarity with animals of southern and even tropical latitudes, and the materials employed in their manufacture include mica of the Alleghenies, obsidian of Mexico, and jade and porphyry, derived probably from the same region or from others still farther south."[2]

These views will, however, meet with little agreement in America, for there appears absolutely no proof of any southern influences affecting the work on the American mound-builders' pipes.

While in many instances it appears impossible to say exactly what was intended to be designed other than man, bird, or beast, it can not be denied that among the mound pipes there are many forms of life skillfully delineated and with true artistic merit.

Some of these pipes are so carefully ground and their surfaces are so skillfully polished as to preclude the possibility of demonstrating the exact mechanical process employed in working them into shape, though parts of the work of finishing can at times be determined in a measure. The bowls of mound pipes have been bored usually with tubular metal drills, though there are examples bored with solid point. The uniform size of the bowls suggest that if bored by Indian tools, it was done with the solid shaft revolved between the hands. There are exceptions known in which the bowl has an irregular shape, owing to a loose point on the drill shaft, which would suggest its being caused by the employ-

[1] Daniel Wilson, Prehistoric Man, I, p. 366, London, 1876.
[2] Idem, I, p. 363.

ment of a strap or pump drill, tools apparently unknown until the whites came into the country.

The pipes in shape of the human head are remarkably well executed; the snake is not to be mistaken, nor the frog, nor the beaver; members of the cat tribe appear to be represented, and the turtle; though of these the species is often indeterminate. Birds are usually distinguishable only as birds; scarcely a single one can be positively recognized as to species. Elephant pipes are as good representations of the animal as are those of any other creature of which examples have been found. The artistic ability to imitate in stone animal form and action is no more developed in pipes of the mound-builder type than it is in stone carvings made by Indians in contact with the white man of the present day, the latter producing work equal, if not superior, to any from the mounds. An argument in favor of the contemporaneity of these pipes with the whites is that were they of purely aboriginal origin we would find also numerous examples of their idols or fetishes, executed with similar artistic ability. If these objects were of local white origin, we may safely infer that while the whites would supply pipes in effigy of man or beast, the religious prejudices both of early French and English during the seventeenth century would have caused either to recoil with horror from any attempt to further idolatry or idolatrous worship for fear of their own future punishment did they do so. Mr. William Wallace Tooker, says: "The discovery of the monitor pipe among the effigies of Wisconsin, with curved base, a round bowl, and the same finish as those found in the mounds of Ohio, I regard as an additional link in the chain of evidence that they are of Algonquin manufacture wherever found. Here I regret to differ with Prof. Cyrus Thomas, who attributes this form of pipe to the Cherokees."[1]

An examination of the geographical distribution of mound pipes apparently sustains Mr. Tooker's assertion that they are not of Cherokee origin, though he appears to consider the monitor and mound pipe as identical, which to the writer they do not appear to be. The hollow of both bowl and stem in the platform or monitor pipe is usually larger than in the mound pipe. The former always has a flat base, while the latter is curved. The monitor seldom, if ever, has any ornamentation upon it in the way of figures of animals; the latter commonly has. The monitor does not appear often west of Ohio. The mound pipe is as often found in Illinois, Iowa, and Michigan, as in Ohio. The monitor is found in Tennessee, North Carolina, and South Carolina, and in the northern United States. The mound pipe is not found in the States bordering on the Atlantic. The monitor is made from a soft stone and the mound pipe from a much harder one. General Gates P. Thruston considers, after careful examination of some of the originals and of casts of the Squier and Davis collection, that as types of the mound-

[1]The Bocootawanankes, or the Fire Nation, The Archæologist, August, 1895, p. 255.

builders' art the fine Tennessee and southern pipes are not inferior to the Ohio mound pipes.[1]

The geographical distribution of mound pipes indicates two centers, one near Chillicothe, Ohio; the other near Davenport, Iowa, with some in Illinois and few in Indiana, about Laporte, near the lower edge of Lake Michigan.

Colden's Five Nations (1747) indicates the existence of certain great carries, then well known, between the headwaters of the Hudson and Lake Champlain; Lake Erie and the headwaters of the Allegheny; another from Lake Erie, by way of the Maumee, to the Wabash; another from the Maumee to the headwaters of the St. Joseph and then into Lake Michigan. The absence of mound pipes, or their scarcity, even in Illinois and Indiana is merely negative testimony, but taking the extremes of Chillicothe and Davenport, what would be the easiest route from the former to the latter? To float down the Scioto to the Ohio and down the Ohio to and up the Mississippi to Davenport, Iowa, would take one through a country where this pipe is not found, or so rarely found as to negative the likelihood of this being the direction of travel. This route would also be through a country where one would, during the seventeenth century, more probably have encountered antagonistic linguistic stocks than would have been the case had the route up the Scioto, across to the head of the Maumee, from the Maumee across to the St. Joseph been followed down to Lake Michigan, and from the lake either by way of Green Bay to the Wisconsin, and down it or by crossing the carry in the neighborhood of Chicago, and down the Fox River into the Illinois, or to strike the Rock River and down it to the Mississippi. This northern route and then westward, followed by any of the waters indicated, would carry one through affiliated tribes at the early period of our history, and throughout this indicated territory the mound pipe appears common. Again, if the mound pipes owe their origin in anyway to white influences, the territory through which they are found is within the area first reached by the French, who spread over the interior waters, by way of the lakes, as a base from which the St. Lawrence could be most easily reached. Admitting French influences as affecting the style of the mound pipe, their not being found along the shores of Erie and Ontario or on the St. Lawrence would indicate strongly that the foreign influence was one indigenous to the interior, which is easily explainable upon the theory that it was a supply made to meet a local demand. Were the mound pipes of great age it is not likely that specimens would be found of catlinite, from which some were made, if we may rely upon the records. The vast distance from which it had to be brought, from the country of a people of distinct linguistic stock, would also indicate no great antiquity to its use, but the material, we know, after the advent of the whites, became an article of barter, chiefly, the writer believes, due to the spread of general trade with the natives.

[1] Antiquities of Tennessee, p. 177 note, Cincinnati, 1890.

The specimens of pipes in the collection of the U. S. National Museum of the mound type have usually plain bowls, and there is absolutely no reason to suppose them to be other than they are represented. They have been examined closely for surface indications of tool marks, which were found in most instances, and suggest the presence of the metal file of the whites. Their geographical distribution would also suggest Lake Michigan or Erie as being the point of origin of the type rather than either of the extremes of Chillicothe or Davenport. The similarity of the type is undoubtedly due to a common origin for the Iowa and Ohio pipes, though the curved base of Ohio appears to have a tendency to flatten along the Mississippi bank of the State of Iowa, though it would be natural to suppose the flat base more ancient and more readily made than the curved. The localities where these pipes are usually found corresponds with the route which Marquette and other French travelers appear to have followed down to the Mississippi and into Ohio from Lake Erie, which is presumably the route well known to the fur traders who preceded the discoverers. The style of the carving on these pipes is certainly more of a civilized than of a savage character, and undoubtedly belongs to a much higher art than other primitive and ancient objects found on the North American continent, and does not correspond with what is known of the product of the Indians' primitive tools. The writer is informed by Mr. David Boyle, an authority on the archæology of Ontario, in answer to a question as to whether the mound type of pipe had been found in Ontario or on the St. Lawrence, that, "indeed it would not surprise me to find a few stray pipes of this kind in Ontario, but nothing of the sort has come to my notice. If French influence was in any way connected with the curved base, nothing is more reasonable than that numerous examples of it should be met with in this country, but, while I am not in a position to state positively, I have never even heard of one. I think that the fact of curved base pipes being found always on the line of French travel is merely a coincidence and a very natural one. Those who affected this style of pipe along the valleys of the Scioto, the Wabash, the Illinois, and the Wisconsin were the people among whom the *voyageur* and the *coureaur du bois* met with most success in their trading operations, and the following of the river routes was as natural to the Frenchman as to the Indian. That many pipes are the product of European skill is, I think, undoubted, but I sometimes think also there is a tendency to attribute too much to this source. It is undoubted that there is a tendency to modernize the Indian and his manufactures, though, on the other hand, those favoring his great

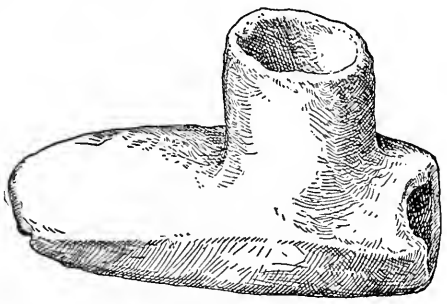

Fig. 137.
STRAIGHT-BASE MOUND PIPE.
Clifton, Kanawha County, West Virginia.
Cat. No. 3217, U.S.N.M. Collected by P. W. Norris.

antiquity have for so long held the field that to raise the question will only open the door to impartial examination and final successful determination after a thorough investigation of all the proofs."

Fig. 137 is a straight-based white limestone pipe of the mound type, collected by Mr. P. W. Norris. Though the bowl is very plain and the base extends only on one side of it, the stem opening of this pipe is three-eighths of an inch and that of the bowl about 1 inch, which marks this specimen as quite unusual for this type in its stem, from the large opening. It was found at Clifton, Kanawha County, West Virginia, and is very much weathered and as soft, almost, as chalk. Another specimen of this type, having an unusually large stem, is in the Douglass collection, which was found in Highland County, Ohio, being made of a light gray stone. Yet another, apparently related to these two, having a stem opening of three-eighths of an inch, is in the same collection and is from Putnam County, West Virginia.

DOUBLE CONOIDAL PIPES.

There is yet another and markedly distinct type of pipe which is found distributed over a wide, though contiguous, area, which invites most careful scrutiny, whether from a technological, archæological, or ethnological standpoint. The characteristics entitling it to be classed as of like type are, that the bowl and stem holes consist of conoidal excavations made at right angles to each other, meeting at their apices where the two cavities intersect. This type, in its exterior form, varies greatly, in fact more than probably any other American type known, yet the stem and bowl are so true to type as to stamp a kinship which is difficult to ignore. Did we alone consider merely the biconical perforations, in the majority of instances it would be impossible to say which was intended to hold the stem and which the tobacco, and it must further be admitted that in the whole number of pipes of this type in the collection of the U. S. National Museum there is not a single specimen which has upon it, so far as the writer could observe, a mark indicative of the use of other than the stone tool of the primitive Indian, though many of this type are of quite elaborate design. Certain similar art concepts are observable in this type within restricted areas and it will be interesting to determine whether they are due to tribal, totemic, or trade influences. The materials of which these pipes are made are as varied as the pipes themselves. They are found of pottery, indurated clay, steatite, and even sandstone. The pottery of some is

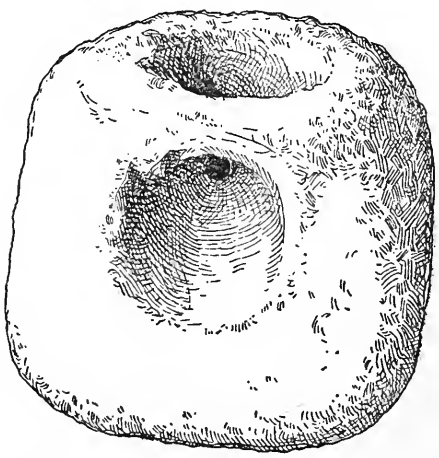

Fig. 138.
DOUBLE CONOIDAL PIPE.
McNairy County, Tennessee.
Cat. No. 97430, U.S.N.M. Collected by W. M. Clark.

pure clay; of others the clay is mixed with a shell or sand tempering. Some of the material is most suitable, other is most unsuitable, to resist heat. Some of these pipes are found made of the most primitive form and others of the most ornate, showing an artistic conception and excellence of treatment quite remarkable.

Fig. 138, collected by Mr. W. M. Clark, from McNairy County, Tennessee, is an almost perfectly square block of reddish sandstone, about 3 inches in exterior diameter, which has been hammered or picked into shape without the slightest effort to smooth its surfaces, its stem and bowl cavities each being cone-shaped and about half an inch in diameter at the surface with a like depth, and are at right angles to each other, intersecting at the apices of the inverted cones where the opening between the bowl and stem is scarcely one-fourth of an inch in diameter. There is no evidence in this specimen of any tool being used, even in excavating the bowl and stem, except a picking implement. The chief distinction between this pipe and the ordinary bowl pipe is that in the latter the stem opening is seldom in excess of one-half the diameter of the opening of the bowl and is generally much less, though it must be admitted that this difference could be reconciled were it owing to difference in supply of stem material.

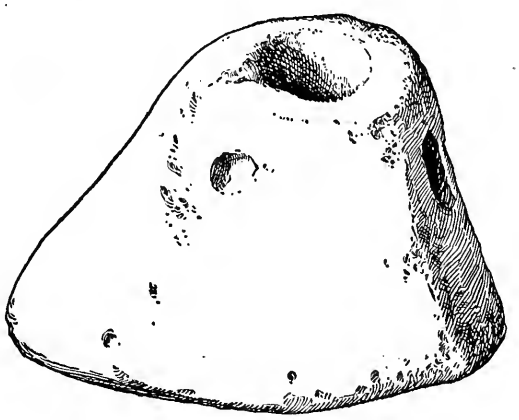

Fig. 139.
DOUBLE CONOIDAL PIPE.
Ohio.
Cat. No. 6708, U.S.N.M. Collected by J. H. Devereux.

Another pipe, belonging apparently to this type (fig. 139), is from Ohio, collected by Mr. J. H. Devereux. It stands about 4 inches high, and is made of a water-washed pebble of gray sandstone, upon which almost the only artificial work has been performed in excavating the bowl and stem openings and in making shallow depressions on each side, as though to indicate the eyes of some creature. In outline this stone is unattractive, and were it not for the eyes would be scarcely more remarkable than the first figure of this type. A striking and somewhat typical characteristic of this pipe appears on its base, which has been flat, but is worn in its longer diameter into quite a broad, deep groove, evidently caused by being used as a grindstone for sharpening tools. Upon the back of this pipe the stone has been slightly ground above and below the stem hole. There is in the collection of the museum of the University of Pennsylvania a similar specimen from West Virginia, made of brown stone, having a bowl $1\frac{5}{8}$ inches in exterior diameter. The diameter of the stem is large, but its dimensions can not be given because of the scaling of the stone. Around one part of the side of the stem opening where it is not scaled two rings are cut in intaglio,

one larger than the other; eyes are also incised. Across the front of this stone are incised a number of straight lines, one above the other, the significance of which it is difficult to guess. Except as noted, the stone presents only a water-washed appearance, saving that on the bottom appears again the long, deeply worn groove made by sharpening tools, which is cut deep into the stone. This peculiarity in the natural shape of the pebble appears to have been suggestive to the Indian mind of the form of an animal, which he has endeavored to perfect by cutting a few lines across the stone. A specimen of this type (fig. 140), found by Mr. Warren K. Moorehead in Ohio, though badly broken, shows how the Indian has taken advantage of the peculiar shape of a water-washed pebble to make a pipe. The material is a sandstone, which one would suppose was poorly suited to resist the heat generated in smoking it. Yet here was a shape suggestive of animal form which would cause a child or even a grown person to preserve it, which, with the slightest addition, would give the most primitive representation of animal form which we have met with. There are few archæologists who have not at some time been astonished to find water-washed pebbles or concretions of unusual shapes on the sites of Indian villages which had evidently been collected and preserved by the Indian because of their resemblance to some creature or object. All experience has a tendency to impress the archæologist with the fact that man in a savage state had quite a lively appreciation of grace of outline in stones or shells, as well as that he would be impressed with brilliance of color, whether it were in the plumage of birds, the tint of shells, or the brilliance of foliage.

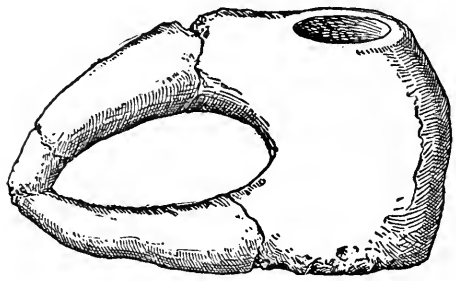

Fig. 140.

DOUBLE CONICAL PIPE.

Ohio.

After specimen in possession of Warren K. Moorehead.

Fig. 141.

DOUBLE CONICAL PIPE.

Louisiana.

Cat. No. 8641, U.S.N.M. Collected by D. Swift.

An unattractive and unornamental pipe of rectangular shape (fig. 141), collected by Brig. Gen. D. Swift, of the United States Army, from Louisiana, having the upper part of its bowl broken, but with peculiarities entitling it to be classed in this type, is of sandstone and has the groove for tool sharpening on its base, in addition to the similarity in diameter of bowl and stem opening. Upon one corner of the base there is a drill hole, which has been begun and is an eighth of an inch wide with a depth of about three-

sixteenths of an inch, two similar depressions being on the front of the pipe.

Another rectangular, double conical pipe (fig. 142), found in a mound in Louisiana, collected by Brig. Gen. D. Swift, United States Army, is of soft white sandstone, about 3 inches long, with an equal height, and a width of 2 inches. It is, however, badly broken and worn, and though upon one side there is a scroll-work design which extends around the front, upon the other side the erosion of time has eaten away all signs of ornamentation. The sigmoidal curves are gracefully executed, and though the stem is slightly deeper than is the bowl, each has been bored by means of broad-pointed drills, preserving the biconical characteristic of the type. There are two bands around this bowl—one plain and the other gracefully curved, with semicurved lines from the interior edge of the bowl to the plain band, which gives the appearance of a rope encircling the upper edge of the bowl.

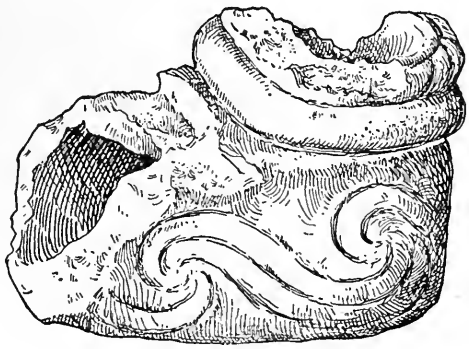

Fig. 142.
DOUBLE CONICAL PIPE.
Louisiana.
Cat. No. 8642, U.S.N.M. Collected by D. Swift.

This type is apparently, the same, in fig. 143, from southeastern Missouri, collected by Mr. F. S. Earle, which is slightly larger than the last figure and is made of a compact, fine-grained sandstone. The decoration of this pipe, the shape of bowl and stem—in fact, the entire pipe—are suggestive of a knowledge of pottery. The base is massive in proportion to the size of the rest of the pipe, and is suggestive of similar characteristics in pipes of this class. The stem shows a somewhat greater elongation than does the bowl, though the biconical bowl and stem are little changed. Six crosses surround the bowl, which are of so pronounced a Greek type as to suggest the white man's presence; and although many archæologists instance supposed pre-Columbian occurrences of the cross, it must be suggested that the occurrence of several crosses together raise more strongly the suspicion of the presence of the European than would a single cross, especially throughout the territory where Spanish and French influences were first felt. The pioneers of these regions were often members of religious orders, whom all early accounts record were

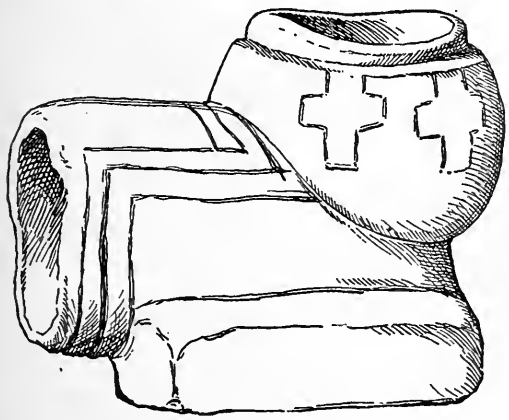

Fig. 143.
DOUBLE CONICAL PIPE.
Southeastern Missouri.
Cat. No. 72134, U.S.N.M. Collected by F. S. Earle.

the first to raise the cross upon entering every Indian village. The French constantly refer to this practice, as do the Spanish, notably Castaneda, chronicler of the expedition of Alarcon, as well as the early missionaries of the Mississippi River.[1]

Fig. 144 is distinctly of the same type and differs from the three preceding specimens only in that it is made of a gray serpentine. The specimen is 4 inches long, 3 inches high, and $1\frac{3}{4}$ inches wide, the biconical characteristics of bowl and stem being of proper corresponding dimensions. It was found in Mobile Bay, being collected by Mr. C. Caderte. The elongated stemmed specimens of this type appear to have been scraped into shape and finally ground to a uniform surface. There is in the U. S. National Museum a specimen (Cat. No. 59279) of chloritic slate which has been shaped by first sawing out the form, which subsequently was scraped and ground to a uniform surface. Similar work is evidenced in modern unfinished stone pipes from California and Oregon in the U. S. National Museum. This process by which they were finished corresponds with stonework noticed on implements found in Swiss lake dwellings of the stone period. The work upon any given implement would naturally depend upon the hardness of the particular material. On certain of the biconical pipes the bowl and stem cavities appear to have been first started by pecking a depression into the surface. This would be enlarged by a solid drill or at times even finished with the drill, though there are specimens which have had the cavities enlarged by gouging, a very common practice with all pipes of soft stone.

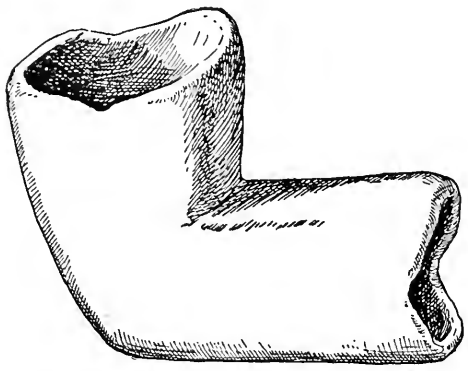

Fig. 144.
DOUBLE CONICAL PIPE.
Mobile Bay, Alabama.
Cat. No. 32324, U.S.N.M. Collected by C. Caderte.

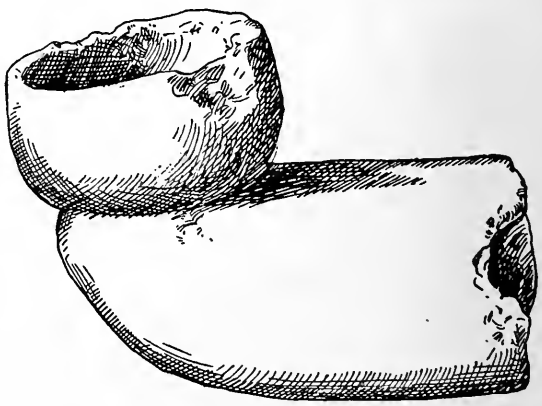

Fig. 145.
DOUBLE CONICAL PIPE.
Georgia.
Cat. No. 131980, U.S.N.M. Collected by J. McGlashan.

A careful study of American stone implements, or those, in fact, of the stone age elsewhere, demonstrates, with scarcely an exception, that primitive man shaped stone tools with the least possible labor. Few implements of the stone period required so long as a week to make

[1] Castaneda, 1540, Relation du Voyage de Cibola, translated by H. Ternaux Compans, pp. 272, 292, 310, Paris, 1835.

them, and in the majority of instances scarcely more work was put upon them than could with stone tools be done between the rising and setting of a day's sun. Arrow and spear heads require but comparatively few minutes from the beginning of work upon the spall to their completion with the chipper.

Fig. 145, from Georgia, collected by Mr. J. McGlashan, is made of a soft steatite, which has a stem of ellipsoidal shape, though its bowl is similar in shape to that of the pipe figured from southeastern Missouri (fig. 143), and retains the biconical characteristics in bowl and stem openings, both of which have been gouged out with a chisel, the pipe being $3\frac{1}{2}$ inches long.

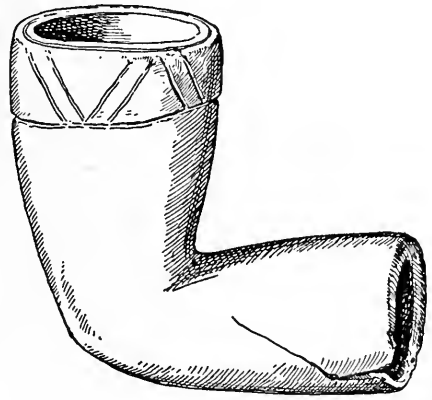

Fig. 146.
BICONICAL PIPE.
Wood County, Virginia.
Cat. No. 2366, U.S.N.M. Collected by D. N. Neal.

A fine-grained, compact brownstone pipe (fig. 146) from Wood County, Virginia, collected by Mr. D. N. Neal, $3\frac{3}{4}$ inches high and of similar length, with round bowl, and stem has a simple ornamentation, though the shape of the pipe indicates that similar ones were made of pottery. The stem hole of this pipe is slightly smaller than that of the bowl, both being drilled, however, with a solid point.

Fig. 147 is a light-colored pottery pipe from Osceola, Arkansas, collected by Dr. Frank L. James. It is but slightly burned, and appears to contain no tempering material. The characteristics of bowl and stem appear to belong to the biconical type, though the point or prow beyond the bowl is a marked characteristic of the Siouan pipe, as well as those of some of the other Western Indians.

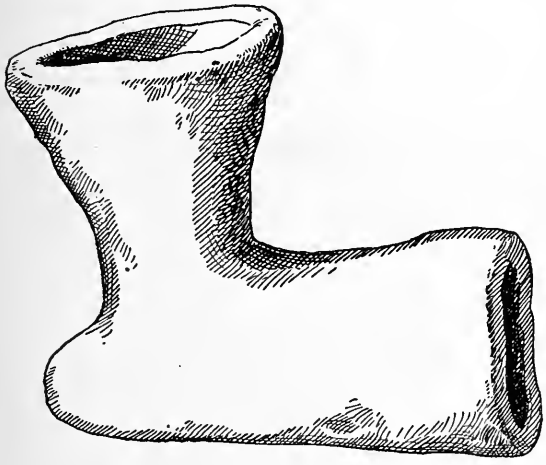

Fig. 147.
BICONICAL PIPE.
Osceola, Arkansas.
Cat. No. 31134, U.S.N.M. Collected by Frank L. James.

Mr. Clarence B. Moore, in his monograph, figures a number of pipes which appear to belong to the type under discussion, and are in the geographical area where similar pipes are found,[1] though Florida produces apparently also the large-bowl pipe, which has a small stem.

Two hard-burned, nearly black, double-coned pipes, with flat bases,

[1] Certain Sand Mounds of the St. Johns River, Florida, Pt. 2, pp. 154, 185, figs. 24, 60, Philadelphia, 1894.

from a stone grave in southeastern Missouri, are in the museum of the University of Pennsylvania, which also possesses a light clay pipe of this type, upon the surface of which are a number of circular stamped impressions in the clay. There is also in the same museum a partly decorated pipe of this type from Kershaw, South Carolina, made of a light-yellow pottery, and yet another made of steatite found on the site of an Indian town in a grave 2 feet below the surface near Camden, South Carolina, which has a double row of ornamental figures running around stem and bowl. These last two pipes have been illustrated by Schoolcraft.[1]

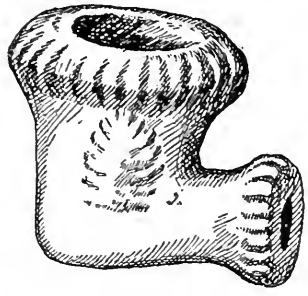

Fig. 148.
MODERN POTTERY MOUND PIPE.
St. Johns River, Florida.
Cat. No. 2420, U.S.N.M. Collected by G. S. Taylor.

A unique specimen of a pottery pipe (fig. 148) is from St. Johns River, Florida, and was collected by Col. G. S. Taylor. It is only an inch high, with a like length, and was found in a mound, though there can be no doubt of its modern origin, as it yet retains the mold mark and stamp of a tobacco plant and the coat of arms of the pipe makers' guild of London, though the type does not appear to be that of any of the many early known ones turned out by English pipe makers, being the only specimen which has come to the writer's notice.

In fig. 149 is again encountered the projection common in the territory contiguous to the Sioux. It is a pottery pipe, the clay from which it is made having a mixture of shells. It is from Indian Bay, Lonoke County, Arkansas. It is about 3 inches long and of like height, the band around the bowl being decidedly ornamental. The size of bowl and stem retain the characteristically large dimensions of the biconical pipe cavities. There is in the U. S. National Museum collection a light-colored clay pipe of this type from Pecan Point, Mississippi County, Arkansas, the bowl of which has been badly broken, though enough remains to show that a snake was twined around it, the head being yet intact. The stem of this pipe is elliptical and the point less pronounced in front of the bowl than in any of the pipes figured.

Fig. 149.
BICONICAL PIPE.
Indian Bay, Lonoke County, Arkansas.
Cat. No. 88123, U.S.N.M. Collected by E. Palmer.

While retaining bowl and stem characteristics, fig. 150 is a hard-burned pottery specimen from Carroll County, Tennessee, collected by Rev. E. H. Randall. It presents quite a peculiar feature in the band or

[1] North American Indian Tribes, Pt. 2, plate 43.

handle reaching from the end of the stem to the top of the bowl, a somewhat similar characteristic appearing on the pipe from Tennessee (fig. 207), in which the hair or cue forms a somewhat similar ornamentation. This band is possibly intended for the double purpose of attaching the cord to the stem and as an ornament. It is decidedly shorter, however, than others of these pipes upon which the Siouan prow appears. A somewhat similar pipe, though of stone, from Hickman County, Kentucky, is figured by Dr. Joseph Jones, the handle of which he thinks is in imitation of the armadillo.[1]

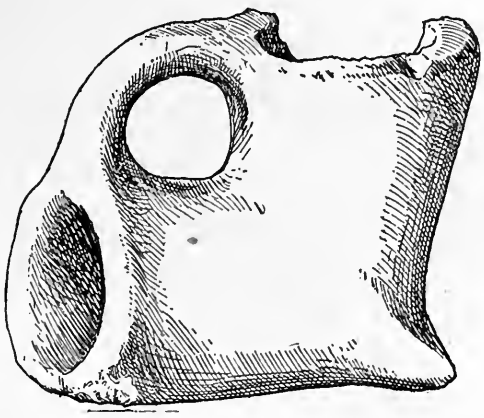

Fig. 150.
BICONICAL POTTERY PIPE.
Carroll County, Tennessee.
Cat. No. 34522, U.S.N.M. Collected by E. H. Randall.

A pottery pipe (fig. 151) from Loudon County, Tennessee, collected by Mr. J. W. Emmert, has a bowl apparently formed in shape of those of the biconical type, though its stem belongs rather to a class of pipes found commonly in North Carolina, South Carolina, Georgia, and Tennessee, many of which are of metal, while others are of stone made in imitation of metal or pottery forms. The pottery of which this specimen is made has a large percentage of shell mixed with the clay.

Fig. 151.
POTTERY PIPE.
Loudon County, Tennessee.
Cat. No. 116026, U.S.N.M. Collected by J. W. Emmert.

Are these pipes of Cherokee type, concerning which it has been said "they (the Cherokees) smoked sumac leaves in wooden pipes, the tube of which was made of cane. I have seen such pipes belonging to them which were in the shape of a bear—the opening for the tobacco on the back and the tube fixed near the tail,"[2] or does the author refer to those heavy pipes of biconical form in imitation of animals? Thruston has called attention to this type, saying: "Large funnel-shaped stem holes, sometimes even larger than the pipe bowls, appear to the author to have been one of the distinguishing characteristics of the southern clay and stone pipes, and we suggest to antiquarians the importance of this feature in the proper classification of these objects."[3]

This feature of bowl and stem is a peculiarity extending over an extensive and continuous geographical area from Florida, South Caro-

[1] Explorations of the Aboriginal Remains of Tennessee, p. 138, fig. 74.
[2] Maximilian's Travels in the Interior of North America, p. 81, London, 1843.
[3] Gates P. Thruston, Antiquities of Tennessee, p. 178, Cincinnati, 1890.

lina, Georgia, and Alabama, over to and down the Mississippi River, and up the same as far as Michigan, generally upon the eastern side of the great river, through a territory familiar to the French from 1680 onward for nearly a century. Animal forms are quite common in this type, those of the human being probably predominating; some appear to be totemic, while the artistic merits of many are of a character difficult to reconcile with savage art. These pipes are at times so massive as almost to justify the term monumental in referring to them, a remarkable peculiarity being that, with scarcely an exception, the creature faces from instead of toward the smoker, as is common with the mound pipes and the older catlinite rectangular specimens. They vary from 3 to 8 inches in length or height, and from 2 to 4 inches in width. Among the animal forms none is more common than the frog.

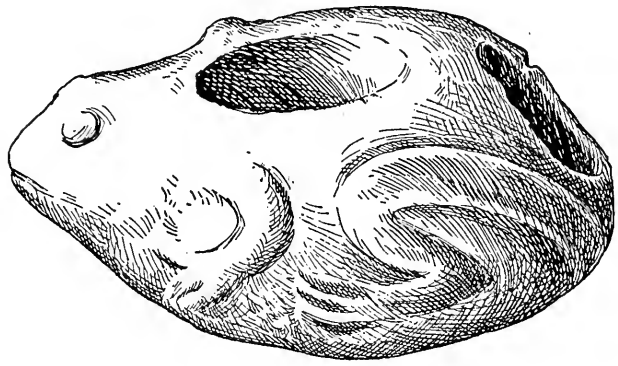

Fig. 152.
BICONICAL FROG PIPE OF SANDSTONE.
Branch County, Michigan.
Cat. No. 42931, U.S.N.M. Collected by H. T. Woodman.

A pipe of the biconical type from Algansee, Branch County, Michigan, collected by H. T. Woodman (fig. 152) is about 4 inches long and almost as wide, and is $2\frac{1}{2}$ inches high. The legs and eyes are represented in low relief, the bowl and stem holes are both pecked in, and each has a surface diameter of $1\frac{1}{4}$ inches. The pipe is made from a compact and hard, close-grained sandstone, shaped by means of a stone hammer, and though the surface has been subsequently smoothed the hammer marks in places are quite distinct.

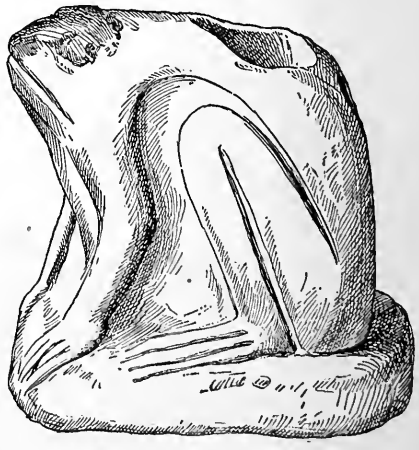

Fig. 153.
BICONICAL FROG PIPE.
Cherokee Nation.
Cat. No.7331, U.S.N.M. Collected by J. A. Paxton.

In fig. 153 is shown a pipe from the Cherokee Nation, collected by Mr. J. A. Paxton. The frog has been carved somewhat more in the round, the texture of the stone appearing so like the last figure as to raise a suspicion that both came from the same locality. The stem hole of this pipe is scarcely half an inch in depth, and that of the bowl hardly over seven-eighths of an inch deep, the stem being smaller than the bowl opening, the shallowness of the same making it extremely difficult to attach a pipestem. The base of this pipe has the same

worn groove noted in some of the ruder pipes of the type, caused by rubbing some object back and forth as though to give it a point, the cavity being worn in quite half an inch at its greatest depth.

Similar to the two preceding specimens is fig. 154, a cast from Miami County, Ohio, collected by Dr. E. H. Davis, the original being of brown stone. It is carved with greater skill than either of the other specimens, is 5 inches long, with a corresponding height, and has a width of 3½ inches. The hind legs are more in relief than in the other specimens, the fore legs being carved entirely in the round. The eyes of this frog are represented by depressions, but in other respects there is great similarity of treatment of all three figures.

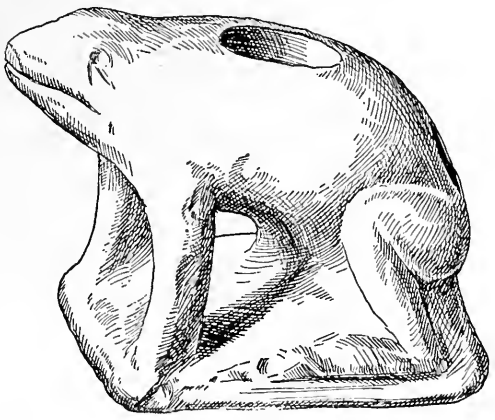

Fig. 154.
BICONICAL FROG PIPE.
Miami County, Ohio.
Cast, Cat. No. 7206, U.S.N.M. Collected by E. H. Davis.

The characteristics of the biconical type are preserved in fig. 155, a pottery pipe from Nelson County, Virginia, collected by Mr. J. Ralls Abell. The specimen is 4 inches long, 3½ inches wide, and 2½ inches high, made from a clay mixed with shells, though it is quite indifferently burned. The hind legs are molded in high relief, the fore legs being brought together under the chin. The eyes are quite prominently raised above the surface. Into the pottery a number of rings have been cut after the pipe was baked.

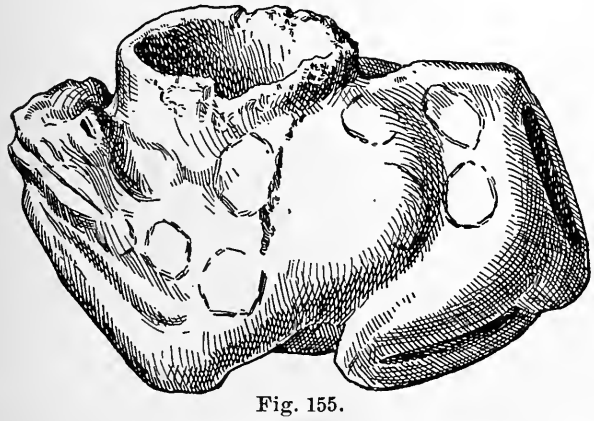

Fig. 155.
BICONICAL POTTERY FROG PIPE.
Nelson County, Virginia.
Cat. No. 11596, U.S.N.M. Collected by J. Ralls Abell.

A light-colored pottery pipe (fig. 156) from a mound in Coahama County, Mississippi, collected by Hon. J. L. Alcorn, represents some quadruped, though it would require a vivid imagination to be more specific and say for what it was intended. The pipe is 5 inches long, 3 inches wide, and 3½ inches high, and represents the creature as about to hop or jump away. Into the face the eyes have been cut, and both above and below them are three straight cross lines parallel to each other. From the side of the head or jaw there are wing-like extensions upon which eight or nine parallel lines are cut into the pottery ware. On the top of the head are two knobs on each side, as though intended to indicate horns and ears. The fore legs are rudely modeled in the

round. The upper edge of the bowl, which is $1\frac{1}{8}$ inches in diameter, is slightly raised above the surrounding surface, and instead of one there are two stem holes connecting with the bowl, each of which is about the same diameter as is the bowl. The double stem or double bowl is a feature, though not a common one, in American pipes. The clay from which this pipe was made does not appear to have either shells or sand tempering.

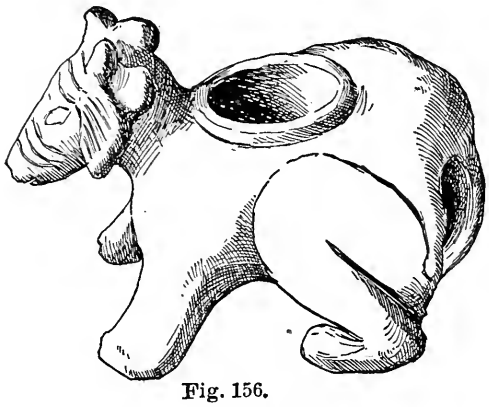

Fig. 156.
BICONICAL ANIMAL PIPE.
Coahama County, Mississippi.
Cat. No. 11649, U.S.N.M. Collected by J. L. Alcorn.

Fig. 157 is a soft, coarse, gray sandstone pipe from a mound in Louisiana, collected by Brig. Gen. D. Swift, United States Army, and stands 3 inches high and represents some four-footed creature; this pipe, however, has not been completed, for neither eyes, nose, nor mouth are indicated. The legs are represented in the manner at times observed in toys, or as they appear upon certain of the statues found by Layard at Koyounjik. The slightly raised bowl has the same treatment observed in the preceding pottery specimen; the stem hole has been enlarged by gouging, while upon the base is found an ovoidal depression, a grinding surface commonly encountered in the biconical pipes. A somewhat similar specimen, though made from clay, found in the Yazoo River, Mississippi, is figured in Squier and Davis's Ancient Monuments.[1]

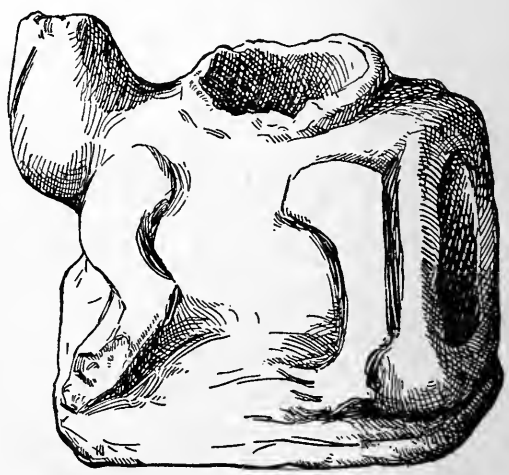

Fig. 157.
BICONICAL ANIMAL PIPE.
Louisiana.
Cat. No. 8648, U.S.N.M. Collected by D. Swift.

The crouching animal (fig. 158) from Hot Springs, Arkansas, collected by Mr. L. H. Thing, made from a soft cretaceous limestone, is $5\frac{1}{2}$ inches long and 4 inches high, with a width of 3 inches. The bowl at its top is slightly raised above the creature's back, and running from its raised rim there is a narrow band to the head, and a slightly broader one extends back until it joins the stem hole. The eyes are depressions carefully cut into the stone, while the mouth is designated by three drill holes barely started. There are lines cut into the face giving to the head a ferocious expression. The nose is represented by two ridges, one of which has been broken away, and over the eye a

[1] Ancient Monuments of the Mississippi Valley, p. 193.

circle is cut into the stone, probably intended as an ornament. Unfortunately, weathering has destroyed a part of the face. The general treatment of this figure gives it a resemblance to certain carvings found in Mexico.

A quartzite figure having a human head (fig. 159), from a flat-top mound near Clarendon, Monroe County, Arkansas, collected by Mr. C. W. Norris, though much larger than the preceding specimens, being 7 inches long, with bowl and stem opening each of a diameter of $1\frac{3}{8}$ inches, retains characteristically the biconical type. The material from which this is made is most unusual, for perforated quartzite objects are extremely rare among aboriginal implements, though examples are not unknown. In boring this bowl it is most singular that several small perforations have first been made and subsequently broken into one—a common practice in working stone among European stonecutters, but, it is imagined, unique among Indian implements. On the left side of the back are a number of incised wavy parallel lines, while over the left ear is a disk-like ornamental object. Eyes, nose, mouth, and fingers have been first pecked into shape and subsequently ground. The face is broad and scarcely superior to the work observed upon sculptures from the Easter Islands, though it is by no means the face of an Indian.

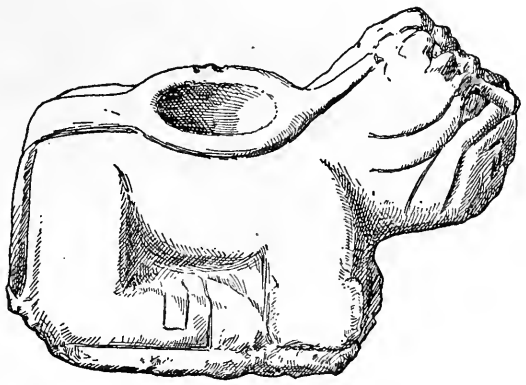

Fig. 158.
BICONICAL ANIMAL PIPE.
Hot Springs, Arkansas.
Cat. No. 88173, U.S.N.M. Collected by L. H. Thing.

Fig. 159.
BICONICAL STONE FIGURE PIPE.
Monroe County, Arkansas.
Cat. No. 71648, U.S.N.M. Collected by C. W. Norris.

In fig. 160 is seen very similar treatment to the preceding figure. This pipe was found in a mound at Kingston, Tennessee, and was collected by Mr. J. W. Dunning. It is but 5 inches long, with a height of 6 inches. The face is typically Indian. The man is represented as crouching on his knees, his left hand lying on the left knee. There is on the head a hat or other covering, while from under it falls on either side a pendant representing the hair. This hat or head gear looks suspiciously like the capote or bonnet of the French voyageur.

Fig. 161 is the cast of a soft white sandstone pipe found in Stoddard County, Missouri, and collected by Mr. T. L. Whitehead. It is 6 inches long and 7 inches high, apparently intended to represent a man creeping upon game. The left knee touches the ground, the right one

Fig. 160.
BICONICAL STONE PIPE.
Kingston, Tennessee.
Cat. No. 23559, U.S.N.M. Collected by J. W. Dunning.

Fig. 161.
BICONICAL STONE HUNTER PIPE.
Stoddard County, Missouri.
Cast, Cat. No. 99343, U.S.N.M. Collected by T. L. Whitehead.

being raised, while in the left hand the hunter holds his bow. There is no right hand or arm, the head and neck of a deer or fawn taking its place. On the back, between the bowl and stem openings, are four or five incised lines somewhat of the character of the Arkansas specimen (fig. 159). The face of the hunter, looking fixedly forward, is of European type. The treatment is highly artistic and could no more be attributed to savage art than could a music box should one chance to be found in a mound.

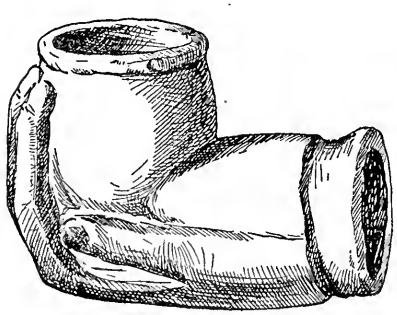

Fig. 162.
BICONICAL POTTERY PIPE.
Mississippi County, Arkansas.
Cat. No. 140884, U.S.N.M. Collected by B. F. Jackson.

Fig. 162 is an almost black pottery pipe 3 inches long, the paste of which it was made being largely mixed with shells, and is strikingly similar in treatment to the stone specimen (fig. 69) from Tennessee. Though this pipe appears to belong to the biconical type, they are so clearly alike as to force the conviction of kinship between them. While the stone pipe has six fingers, both specimens represent the left hand, each holds the pipe bowl, and each has a similar base. Professor Putnam probably refers to pipes of this type upon the opposite side of the river from Madisonville, Ohio, when he says: "For

the first time the large pipes cut in stone in the form of human figures have been found associated with skeletons. This is an important discovery, as heretofore such pipes have only been known from surface finds, although they have been attributed to the people who made the mounds."[1]

IDOL PIPES.

Fig. 163, made of soapstone, is quite complex, and is one of the most interesting of American types found. It is from a mound in Richmond County, Georgia, collected by Prof. Cyrus Thomas. It was found close to the fire bed of Hollywood Mound and not many inches from a copper ax. In about the same layer were also found bits of china and iron nails, sufficiently strong evidence, one would suppose, to prove the contemporaneous presence of whites and Indians. This pipe belongs to what Mr. Charles C. Jones designates as "the idol pipes, which are attributed to the men who threw up those large mounds which tower along the banks of the Etowah River, always associated, as far as we know, with large pentagonal and quadrangular mounds."[2]

Fig. 163.
IDOL PIPE.
Hollywood Mound, Georgia.
Cat. No. 135216, U.S.N.M. Collected by Cyrus Thomas.

It should be observed that two of the three pipes here figured of persons holding bowls have their stems much smaller than are those of the biconical pipes, and the one from the Etowah Mound made of pottery has a stem of the same type as the rectangular pottery pipes from Georgia.

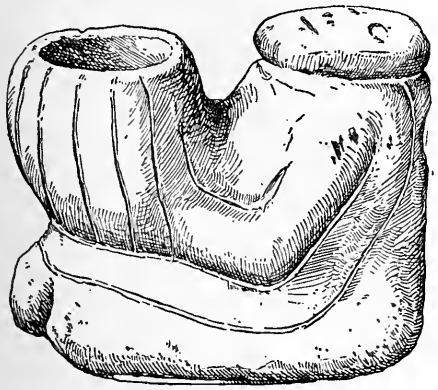

Fig. 164.
IDOL PIPE.
Monroe County, Arkansas.
Cat. No. 71649, U.S.N.M. Collected by C. W. Norris.

Fig. 164 was found in association in the mound in Monroe County with fig. 159, and is $4\frac{1}{2}$ inches long and 4 inches high, with a width of $2\frac{3}{4}$ inches, and is made from an imperfectly crystallized quartz, the arms and hands clasping the vessel constituting the bowl of the pipe. The head is an extremely rude carving, treated in a most primitive manner, the eyes being mere circular incisions cut on a flattened disk by means of a pointed tool; the nose is represented by two spots drilled slightly

[1] F. W. Putnam, Peabody Museum Report, III, p. 500.
[2] Antiquities of the Southern Indians, p. 402, New York, 1873.

into the material, a straight incised line answering for the mouth. Up and down the bowl are a number of equidistant parallel lines intended for ornament, though the work appears to be done with stone tools. Though the size of the stem in proportion to that of the bowl decreases in this class, the biconical features are largely retained. Schoolcraft figures an "idol pipe" similar to those here shown from near Brownsville, on the Ohio River.

Fig. 165, while rude in execution, exhibits similar artistic ability to that evidenced in the two preceding pipes. It is made of pottery and represents a person clasping a bowl somewhat in the manner represented in the other figures, though leaving no doubt that each represents contemporaneous art. This pipe is from the Etowah Mound, in Bartow County, Georgia, collected by Dr. Roland Steiner, and has unfortunately had the head broken from the body. Here in the inclosure also appear to have been found objects of European manufacture. The clay of which this pipe is made does not appear to contain tempering material, and another noticeable feature and deviation from the type is the decreased size of the stem and its similarity to certain other pipes found in this mound which the writer will show to be probably quite modern and similar in characteristics to pipes found in the Hollywood Mound, Richmond County, Georgia, where also objects of European origin were discovered.[1]

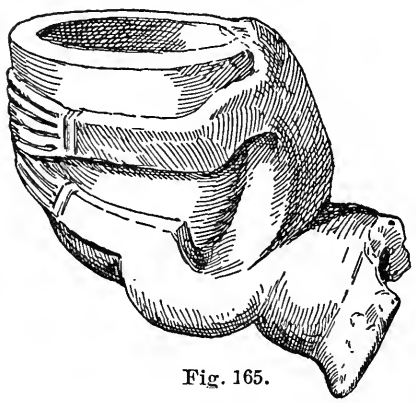

Fig. 165.
IDOL PIPE.
Etowah Mound, Georgia.
U. S. National Museum. Steiner collection.

A similar pipe is evidently referred to in the description of one found in the stone graves of Tennessee, from which Professor Putnam says "only eight pipes had been found in the opening of several thousand graves, among which was a clay pipe with an ornamented bowl, two others were of pottery, and all the rest of stone; one of the latter elaborately carved, representing a man holding a cooking pot, which formed the bowl of the pipe."[2]

GREAT PIPES.

Fig. 166 is the cast of a pipe said to be from Kentucky, collected by Mr. H. A. Ward, and appears to be an unfinished "great pipe" of the Indians, which had been hammered into shape but never finished. It is 10 inches long, 8½ inches wide, and 6 inches high, representing a bird with extended wings, as though in the act of flying. A striking peculiarity of this pipe is that the depression in the breast is the only evidence in the cast of a stem hole, and is unfinished. If this be the case in the original, it is the only specimen of this type of pipe where the

[1] Cyrus Thomas, Twelfth Annual Report of the Bureau of Ethnology, p. 323, plate.
[2] Peabody Museum Report, III, p. 165.

stem does not enter at the back of the object. There is in the U. S. National Museum a cast of a somewhat similar pipe from Mississippi, and yet another in the Douglass collection.

One of the most elaborately ornate pipes known (fig. 167) is from Lexington, Kentucky, collected by Mr. J. Peter, which is 10 inches in its greatest length, 9 inches high, and 2½ inches wide, the bowl being 1⅜ inches in diameter, while that of the stem, which is under the bird's tail, has a diameter of only three-fourths of an inch. The bowl and stem are at right angles to each other, having been bored by means of solid drill points. This pipe represents a bird sitting in an erect position, with its eyes, wings, and tail feathers conventionally carved into the green steatite of which the pipe is made. Reverse this, however, with the bowl upon a flat surface and the bird on its back, and the specimen becomes a rude but very distinct carving of a human head and neck, and, though the ornamentation of this specimen is rudely conventional, it so distinctly represents a white man's conception of the treatment as to almost preclude other hypothesis. This belief is strengthened by a coin or medal of silver struck off during the Commonwealth, which, when held erect, represented the head of Cromwell, and being turned upside down, showed a caricature of someone else of the period. While the Commonwealth would suggest a date about 1649–1659, the pipe might be of any period thereafter. Not-

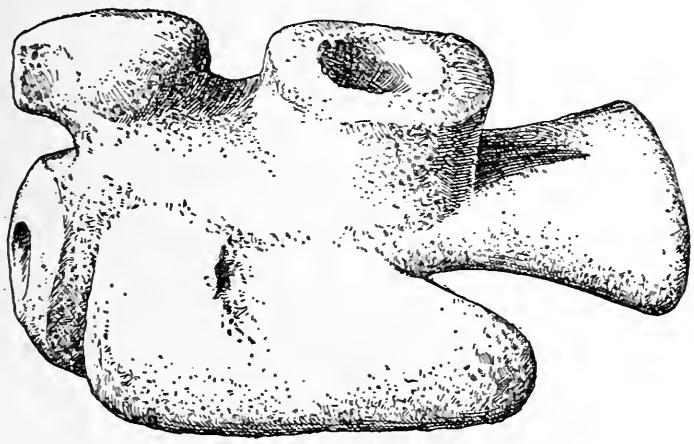

Fig. 166.
GREAT PIPE.
Kentucky.
Cast, Cat. No. 21291, U.S.N.M. Collected by H. A. Ward.

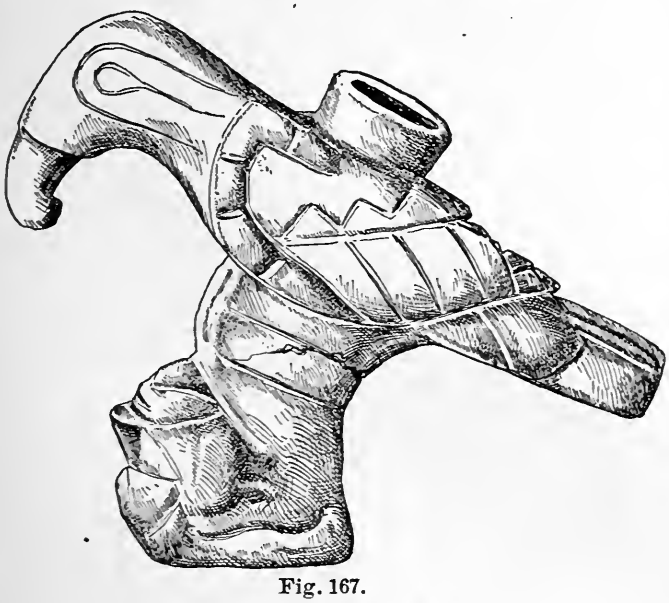

Fig. 167.
GREAT PIPE REPRESENTING MAN AND BIRD.
Lexington, Kentucky.
Cat. No. 16687, U.S.N.M. Collected by J. Peter.

withstanding the fact of this pipe being influenced by modern art, the work upon it is primitive in its character, though the lines have been incised with sharp-edged tools. There is in the U. S. National Museum collection another biconical pipe made of a soft yellow sandstone in imitation of a bird sitting on a perch, which was found in Maury County, Tennessee, the outlines of which are distinct though the specimen itself is quite rude. Squier and Davis also represent several pipes in human form, the persons figured being in a crouching position, one other being that of an animal showing its teeth in a formidable manner.[1] Schoolcraft also figures a pipe of this type.[2]

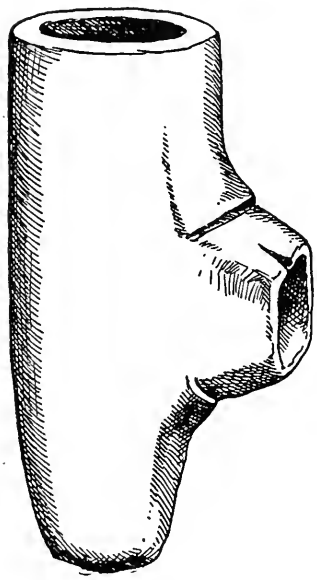

Fig. 168.
INDURATED CLAY PIPE.
Knox County, Tennessee.
Cat. No. 146353, U.S.N.M. Collected by Norman Spang.

A carefully ground though unfinished pipe from a mound in Knox County, Tennessee, collected by Mr. Norman Spang (fig. 168), is made of brown stone, its greatest length being $2\frac{1}{2}$ inches. It was evidently intended to be smoked by inserting the stem in the shouldered opening and holding the pipe by its elongated base, as appears to have been done with the disk pipes. The striæ of the drill yet remain distinct both in bowl and stem opening. Both above and below the stem extension from the bowl the tool marks are quite distinct, the shoulders having been formed by a sawing process.

Fig. 169.
BANDED GREEN SLATE PIPE.
Dubuque, Iowa.
Cat. No. 42545, U.S.N.M.
Collected by H. T. Woodman.

Fig. 169 is a graceful pipe of the preceding form and is also a mound specimen from near Dubuque, Iowa, collected by Mr. H. T. Woodman. It is made of a banded green slate, the whole surface of which has been ground with extreme care. The incision on the side of the prolongation of the bowl has been sawed in on each side and across the end as though intended to represent the mouth of some animal. This belief is strengthened by two depressions on the point, drilled with a rough-pointed tool, probably a stone, or, if of metal, one which was quite dull, as evidenced by the striæ, these depressions apparently being intended to represent the nostrils.

[1] Ancient Monuments of the Mississippi Valley, figs. 75, 146, 148, 149.
[2] Henry R. Schoolcraft, Indian Tribes of North America, Pt. 1, plate 13, fig. 2.

Somewhat similar in outline, though with the position of the bowl reversed, is fig. 170, a pipe of steatite from Boone County, Missouri, collected by Mr. Charles J. Turner. It appears to be made in imitation of a duck's head; the eyes are represented by shallow depressions on each side, the mouth being incised and following in a graceful curve the contour of the outline of the specimen. The slight exterior enlargement of the end of what appears to be intended as the stem would indicate that those who made this pipe were familiar with pipes of some plastic material.

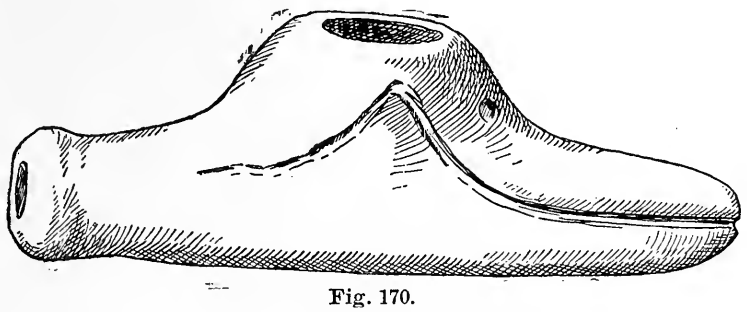

Fig. 170.
STEATITE PIPE.
Boone County, Missouri.
Cat. No. 62031, U.S.N.M. Collected by Charles J. Turner.

In addition to the clay pipe with a double stem from Mississippi herein referred to, there are in the U. S. National Museum two pipes made of stone which have both stem and bowl duplicated. Fig. 171 is a pipe of this character. It is made of a gray chlorite and was found in Rhea County, Tennessee, by Mr. A. M. Rickley. In its greatest length it measures $4\frac{1}{2}$ inches, with a thickness of $1\frac{1}{4}$ inches. Through this stone a hole has been drilled from side to side. There are separate bowls and separate stems on the opposite sides of this discoidal implement. The bowls appear to have first been pecked into shape and subsequently reamed out about one-fourth of their depth, whereas the stem holes yet show distinctly the striæ of the solid drill with which they were made.

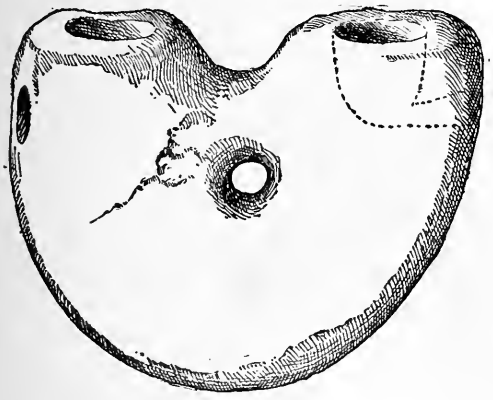

Fig. 171.
BRIDEGROOM PIPE.
Rhea County, Tennessee.
Cat. No. 172316, U.S.N.M. Collected by A. M. Rickley.

Another of these double pipes (fig. 172) is from Columbia, South Carolina, collected by Mr. A. R. Crittenden. It is made of a compact black slate, which has a much more modern appearance than the preceding pipe; besides this, the bowls are one above the other, and to smoke both at the same time could only be done by turning them on the side, and even in that position it would be difficult of accomplishment. The two heads of what appears to be a duck both point in the same direction and each have mouths and eyes represented, though, as so often observed in such cases, the creature is somewhat difficult to recognize. On the opposite side of this pipe to that shown there is in

one corner a cross in form of the swastika, and near the center the letters I N. The work on this pipe has evidently been done with sharp-edged cutting tools, and in one place the marks of a rasp or file are quite distinctly shown by equidistant lines of similar length.

Prof. G. H. Perkins has illustrated a steatite pipe with two bowls and a single stem opening, from Swanton, in the northern part of Vermont, which is well polished, and is said to have been cut out instead of being bored, as is usual in Champlain Valley pipes.[1]

Mr. David Boyle has also described a pipe very similar to the last one, found in Harvey Township, Peterboro County, Ontario, made of pottery, the bowls of both of which open into each other immediately below the point of junction of the double bowl.[2]

The great difference in form of the double-stemmed or double-bowled pipe or in double pipes of any kind found in America would indicate that they were not made according to any fixed rule, but rather to suit individual fancy; though the specimens described are too few to allow of positive expression of opinion concerning them other than that such pipes have bowls and stems usually of modern form, though even this rule has its exceptions. There is said to have been an old Dutch custom of smoking a double pipe on one's wedding day, which was never again used except upon the wedding anniversary. Two such pipes, known as Dutch bridegroom pipes, were in the celebrated Bragge collection, now in the British Museum, and are referred to as "still decorated with the ribbons placed upon them upon a certain festal day that faded into nothingness two centuries ago. The bridegroom pipe was one of the household gods of Holland. Smoked in augury of a happy future upon the wedding day, it was held too sacred to be touched again save on the recurrence of the anniversary of the momentous event."[3]

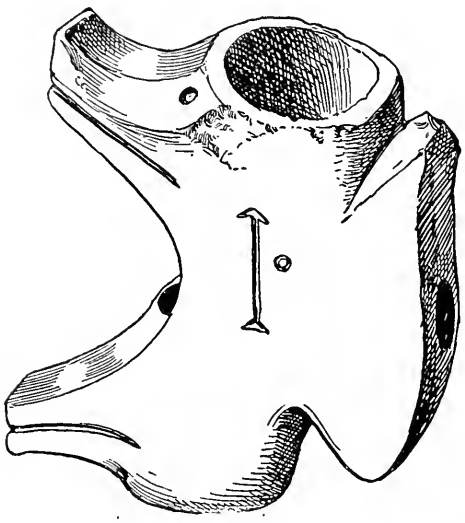

Fig. 172.
BRIDEGROOM PIPE.
Columbia, South Carolina.
Cat. No. 34329, U.S.N.M. Collected by A. R. Crittenden.

THE CALUMET DANCE.

The derivation of the word "calumet" has been discussed, yet this word to one at all familiar with the colonial history of the French in America has an especial significance and means more than a mere pipe. It constituted a peace offering combined with a flag of truce. It was supposed to secure the safety of its bearers during the function of its presen-

[1] The Calumet in the Champlain Valley, Popular Science Monthly, December, 1893, p. 241.

[2] David Boyle, Archæological Report of the Minister of Education of Ontario, 1894-95, p. 58, fig. 28.

[3] The Bragge Collection, p. 3, referred to in Cope's Tobacco Plant, December, 1880.

tation, smoking, and the attendant deliberations, and it was further said to protect those who carried it as far as the borders of the country of the people visited, though there are several references to exceptions to this rule.

If the pipe tendered was accepted peace was acknowledged, while if the pipe was rejected it was war literally "to the knife." Warlike messages were accompanied by red pipes; peaceful messages were accompanied by pipes which were white or so colored for the occasion; even the feathers decorating the pipestem had their special and separate significance, and strangers could tell from the shape of the pipe and its decorations who the people were from whence it came, and the general character of the mission before the messengers spoke. The age of the custom can not be stated with any degree of certainty, though the pipe was apparently used in feasting and on solemn occasions from an early period. The French adopted it as an emblem of peace about 1673, as we learn from Marquette, and later it was also employed by the English, until eventually it became a prevalent custom throughout the larger part of the continent, though the early English emblem in intercourse with the natives appears to have been the collar of wampum, which later became the wampum belt. There is reason to suppose that the native offering of incense to Cortez and his followers was often a tobacco offering of propitiation to creatures from another world, such as was burned to propitiate their fetiches, for tobacco and other plants, from a pre-Columbian era, have played an important part in the sacred dances of the natives, and it may be doubted whether even now the Indian does not connect the burning of herbs with the more mysterious of the affairs of life. Eventually in all transactions between the whites and natives a pipe was smoked; even in social visits the Indian offered his pipe as a welcome, as the Russian or the Arab does salt. Some early references to smoking and other pipe customs are of more than passing value in the study of American pipes. Those quoted are given chronologically, beginning with Raleigh's expedition in 1586, when, according to Stith, "Sir Walter sent upon this voyage a domestic of his, one Mr. Thomas Hariot, and highly in his patron's intimacy. He likewise tells of the great esteem and veneration in which the natives held a plant, which grew spontaneously in the country, and was by them called *uppowoc*, but it is now well known by the name of tobacco; derived, it is said, from the island of Tobago, one of the Caribbees in the West Indies, where it grew in vast quantities. The leaves of this they cured and dried, and then being rubbed into a sort of bean and dust they put it into earthen tubes and drew the smoke through the mouth. They thought this plant of so great worth and value that even the gods themselves were delighted with it. And therefore they sometimes made sacred fires and instead of a sacrifice threw in this dust, and when they were caught in a tempest they would sprinkle it into the air and water; upon all their new fishing nets they would cast some of it; and when they had escaped any remarkable danger they would throw some of this dust into the air, with strange distorted gestures, sometimes striking the earth with their feet in a kind of time and measure;

sometimes clapping their hands and throwing them up on high, looking up to the heavens and uttering barbarous and dissonant words." [1]

This is the first account north of Mexico of the dance of the calumet, of which the French travelers so often speak, and which the Omaha and other tribes yet indulge in. According to Hakluyt, Hariot remarks that—The uppowoc is of so precious estimation among them that they think their Gods are marvelously delighted therewith, whereupon they sometimes make hallowed fires and cast some of the powder therein for a sacrifice; being in a storm upon the waters, to pacify their Gods, they cast some up into the air and into the water; so a weare for fish being newly set up they cast some therein and into the air; also after an escape of danger they cast some into the air likewise, but all done with strange gestures, stamping, sometimes dancing, clapping of hands, sometimes holding up of hands and staring up into the heavens uttering therewithall and chattering strange words and noises. We ourselves during the time we were there used to suck it after their manner, and also since our return, and have found many rare and wonderful experiments of the virtues thereof, of which the relation would require a volume by itself, the use of by so many of late, men and women of great calling and some learned Physicians, also is sufficient witness.[2]

Capt. John Smith, a few years later (1607), speaking of the "Werowance" of "Rappahanah," says "he caused his mat to be spread on the ground, where he sat down with a great majesty, taking a pipe of tobacco, the rest of his company standing about him," and he further says "there was a garden of tobacco there. * * * These people have a great reverence for the sun above all things, at the rising and the setting of the same they making a round circle on the ground with dried tobacco, then they began to pray."[3]

Somewhat after the same manner Smith, in 1608, says: "When the waters begin to run high they haste away to the seaside or the banks of the rivers, and after several invocations and outcries made, they throw tobacco, copper, and other trash into the water, this is in order to appease that power which they believe to be very angry upon such occasions, and must have some such offerings made him before he will be quiet again."[4]

William Strachey, in 1612, evidently referring to this paragraph, quaintly says: "They have also another kind of sorcery which they use in storms—a kind of botonomantia with herbes; when the waters are rough in the rivers and seacoasts their conjurers run to the waters' sides. After many hellish outcries they cast tobacco, copper, or such trash into the water to pacify that god whom they think to be very angry in those storms."[5]

[1] William Stith, History of the first Discovery and Settlement of Virginia, pp. 17, 19, Sabin reprint, New York, 1865.

[2] Thomas Hariot, Hakluyt's Voyages, III, p. 330, London, 1810; reprint of London edition of 1600.

[3] A Discourse of the Plantation of the Southern Colony of Virginia in Introduction to Arber's edition of Smith's Works, pp. lxviii-lxxi, Plate xv, quoting G. Percy.

[4] John Harris, Voyages and Travels, I, p. 846, London, 1705.

[5] Historie of Travaille into Virginia, p. 93, (Hakluyt Society).

Father White, in 1633, also refers to a function akin to this then prevailing in Maryland. "On an appointed day," he says, "there assembled around a great fire all the men and women from many parts of the country. A space being cleaned some one produces a large bag; in the bag is a pipe and some powder which they call "potu." The pipe is such as our countrymen use for smoking, but much larger. Then the bag is carried around the fire, the boys and girls following and singing in an agreeable voice alternately, "Taho," "Taho." The circle being ended the pipe is taken from the pouch with the powder. The powder is distributed to each of those standing around and lighted in the pipe, and each one smoking it breathes over the several members of his body and consecrates them."[1]

There is in these descriptions striking similarity to the calumet dance later witnessed on the Mississippi by Marquette and other French pioneers.

This dancing and clapping of hands appears analogous to the practices of the Natchez, who were said to "venerate the sun, which was evidenced by offerings made to it at its rising and setting;" the officiating functionary was probably a pipe chief or medicine man, such as have been referred to as officers of many of the tribes as far north as the Great Lakes. The pipe bag, pipe, and "potu" reminds one of customs yet kept up among the Pueblos of the Southwest. Holm, in his description of New Sweden, says "almost all the Indians in the northern part of America make use of a token of peace and friendship with which they confirm all that their councils have determined upon, whether it be war or peace, or any other important business."[2]

The Nadousses, according to Raymbault and Jogues, in 1642, were said to "cultivate the land after the manner of the Hurons and reaped corn and petun."[3]

These people were Siouan and appear to have lived in the vicinity of Sault Ste. Marie, in Chippewa County, northern Michigan, and a knowledge of them at this early period would suggest an acquaintance with the country between Lake Erie and the southern part of Lake Michigan, and a propable acquaintance with the waters of the Mississippi itself years prior to Marquette's trip down the river in 1673.

In 1553 the French made peace with the Iroquois at Isle Orleans, in the country of the Hurons, near Quebec, and in the account given of the proceedings by Lescarbot the Indians appear to have followed a practice recorded on many other occasions between the natives and whites of dividing their speeches into parts, each part being accompanied by separate presents, as evidenced with the French by the pipe; if with the English, the speeches were evidenced usually by the wampum belt; which practice continued with slight variation to the period of the Revolution of the colonies.

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[1] Father Andrew D. White, A Relation of the Colony of the Lord Baron of Baltimore, in Maryland, near Virginia, Forces Tracts, IV, No. 12, p. 24.

[2] Thomas Campanius Holm, A Short Description of the Province of New Sweden, now called by the English, Pensylvania, p. 134, Philadelphia, 1834.

[3] Pierre Margry, Découvertes et Etablissements des Français, Les P. P. Charles Raymbault et Isaac Jogues, p. 47, Paris, 1875.

Their captain installed his presents, which pass with all the savages as writings do with us, or as contracts do. Everyone being seated, he raised himself and invoked the sun as a witness of his thoughts, as a torch which banished the night and darkness of his heart and gave day to his words. The presents consisted of beaver skins and porcelain (wampum beads), and each had its name and made evident the desire of him who spoke and those who sent him.

The first, to dry the tears shed for braves killed.

Second. A talisman to prevent vindictiveness of the French for the loss of their people.

Third. A covering for the dead to prevent the recurrence of old quarrels.

Fourth. To keep the dead buried and to prevent them from leaving their graves and showing animosities.

Fifth. To pack up their arms that they might not again be touched.

Sixth. To purify the stream soiled with blood.

And last, to exhort the Hurons to agree to what Onontio decided about the peace.

In reply the governor made speech for speech and present for present.[1]

According to I. A. Lapham "the first white persons who penetrated into the regions of the upper lakes were two young fur traders who left Montreal for that purpose in 1654 and remained two years among the Indian tribes on their shores. It appears that they returned with information relative to Lake Superior and perhaps Lake Michigan and Green Bay, for in 1659 fur traders are known to have extended their traffic to that bay."[2]

"The Sonontonans" (Senecas, Hewitt) "to the number of fifty or sixty assembled in our cabins. Their custom is, on entering, to take the first vacant place, without regard to rank, and at once take fire for lighting their pipes, which are not taken from their mouths during the whole time of the council. They say that good thoughts come with smoking."[3] And among the presents enumerated on the occasion were capots, cooking pots, beads, etc.

At a council in the year 1670 on the shores of Lake Ontario, which Comte de Frontenac held with the Onondagas, Mohawks, Oneidas, Cayugas, and Senecas, he said: "I have lighted a fire to see you smoke (petuner) and to talk to you."[4] Among other things presented at this council were 25 capots.[5]

The French, after their settlement on the Ohio, sent out their fur traders and presumably their fur hunters, who eagerly sought for new fields where the game had not been thinned out and which afforded the most abundant supply. These traders and hunters were the first per-

[1] Marc Lescarbot, Relation de la Nouvelle France, p. 19.

[2] I. A. Lapham, Wisconsin; its Geography and Topography, p. 18, Milwaukee, 1846.

[3] Pierre Margry, Découvertes et Établissements des Français, Relation de l'Abbe de Gallinee, p. 128, Paris, 1875.

[4] Pierre Margry, Découvertes et Établissements des Français, Voyage de M. le Comte de Frontenac au lac Ontario, p. 212, Paris, 1875.

[5] Idem, p. 223.

sons who trod the soil of those States bordering the Great Lakes. It was probably from such persons that the Susquehannocks obtained the articles of European manufacture found in their possession at the head of Chesapeake Bay in 1608, probably by way of Lake Ontario and across from some of its affluents down the Susquehanna. Missionaries, according to Caleb Atwater, "were sent to Onondaga in 1654. From this time forward the French are known to have traversed that part of Ohio which borders on Lake Erie and the Ohio River."[1]

The missionaries were early in the field, but it appears natural to suppose that they would select those territories which offered the most promising fields of work. This information would naturally be imparted by trappers and traders. Lafitau says: "Father Marquette, a Jesuit missionary to Canada, embarked with Sieur Joliet, a French Canadian, to discover the western sea and to attempt to find a way from Canada to China, and was the first of the French to penetrate to the Mississippi River. This was the 17th of June, 1673—that is to say, six or seven years before La Salle went to take possession of the country in the King's name. They followed the Wisconsin River until it fell into a larger river about 42½° of north latitude. They dropped with the current to within two or three days of the Gulf of Mexico, but noticing they were going from their course and fearing the Spanish, returned by way of the Illinois to Missilimackinack" (crossing to the lake at the portage about Chicago). It is in the relation of the voyage of Father Marquette down the Mississippi that he mentions first the calumet of peace, and as he is the first who speaks of it, he is also the one who speaks best. He says:

It was the 25th of June the Indians, having recognized them as Europeans, sent four old men to speak with them. Two of them carried pipes to smoke tobacco in; they were highly ornamented and adorned with feathers of different sorts. They walked solemnly and raised their pipes toward the sun; they appeared to present it to him to smoke without, however, saying a word. They were quite slow in passing over the short distance from the village to them. Having reached them they stopped and looked at them with attention. The Father, reassured by this ceremony, spoke first to them and asked who they were; to which they answered they were Illinois, and to guarantee peace they presented their pipes to smoke; then they invited them to enter their village. One should not refuse the pipe unless he would be taken for an enemy, but it is enough to make out he is smoking. It is sufficient if one carries the calumet with him to show it, by which means he may walk in safety among enemies who, in the midst of fighting, will lower their arms to one who shows it. It was for this reason the Illinois gave this pipe as a safeguard among the nations through which they had to journey. There is a calumet for peace and one for war. They use them to end their differences, for strengthening alliances, and to communicate with strangers.

It is made of a red stone polished like marble, and pierced so that one end serves to receive the tobacco, and the other has a socket for a handle, which is a stick 2 feet long, as large as an ordinary cane, and pierced through the middle. It is ornamented with the head and neck of different birds of the most beautiful plumage, to which

[1] Caleb Atwater, Description of the Antiquities of the State of Ohio, Archæologia Americana, I, p. 116.

they add also large red, green, and other colored feathers. They regard it as coming from the sun, to whom it is offered to smoke when they want calm or rain or sunshine. They fear to bathe in summer or to eat new fruits without having danced to it as follows: This calumet dance, which is very celebrated among these people, is not performed except on serious occasions; sometimes for making peace, or to reunite them for a great war, or for public rejoicing; sometimes for a nation's assistance; at times they use it at the reception of a person of considerable importance, as though to offer a ball or comedy. In winter the ceremony is held in a cabin; in summer out in the air. The place being selected they surround it with trees, in order to shade the whole assembly. There is spread out a large mat of reeds, painted different colors, in the middle of the place, which serves as a carpet for the god of him who makes the dance; for each one has his own, which is called his Manitou. It is a serpent, or a bird, or a stone, or some similar thing of which they have dreamed and in which they put every confidence for success in the war or chase. Sitting near this Manitou and on his right is placed the calumet in honor of the one who has given the feast; the arms, such as clubs, hatchets, bows and quivers, such as they use, are laid around it. Things being thus arranged, those having the best voices, who are to sing, take the most honorable place under the trees. All the world then comes and take their places around them, and as each one arrives he salutes the Manitou, which he does in smoking and blowing the smoke upon him, as though offering incense. Then the one who is to commence the dance appears and goes respectfully and takes the pipe and holding it in both hands he dances it in rythm with the song. He makes it describe different figures; at times he presents it to the company and turns it from side to side, then he offers it to the sun as though he wished him to smoke it; at others he inclines it toward the earth; sometimes he spreads the wings as though he wished it to fly; at other times he places it in the mouths of the assistants that they make smoke it, all in rythm, and it is like the first scene of the ballet. The second scene they imitate a combat and go through an imaginary fight, one with arms and another with the calumet. The third scene is a discourse, in which the one who holds the calumet tells of his victories and it is passed from hand to hand until all have had a chance to smoke.[1]

These Illinois belonged to the great Algonquin linguistic stock, as Marquette informs us, which reached from approximately the thirty-fifth to the fifty-fifth degree of latitude on the east side of the Mississippi.[2] The Sioux being their neighbors on the west bank of the river, from about latitude 33° to latitude 53°. Marquette states that these Illinois had never before seen Frenchmen,[3] though they must have been quite familiar with them, as he refers to their skill in the use of the rifle with which they are supplied by the Indians who trade with the French, and which he says makes them formidable to their enemies.[4]

This pipe Marquette describes as being larger than the common tobacco pipe of the French.[5] It should be observed here that the Illinois pipe referred to answers fully the description of the red Siouan catlinite; and it is hardly possible, when we consider the minuteness of description of the stem and its ornamentation, that had the primitive

[1] Mœurs des Sauvages Amériqains, II, p. 314, Paris, 1724. See also Marquette and Joliet, An Account of the Discovery of some new Countries and Nations in North America, 1673, Historical Collections of Louisiana, Pt. 2, p. 287, New York, 1852.

[2] See map accompanying Seventh Annual Report of the Bureau of Ethnology.

[3] Marquette and Joliet, Historical Collections of Louisiana, Pt. 2, p. 287.

[4] Idem, Pt. 2, p. 288.

[5] Idem, Pt. 2, p. 289.

Illinois pipe been carved with animals upon its stem that so important a feature would have been passed over by Marquette without allusion to it, and as a further evidence of the curved-base mound pipe owing its elegance of form to European influence the locality where Marquette received the pipe was in the area of the mound type.

The calumet in the dance is used to defend the bearer from the attack of the warrior who has taken the bow and arrow from the mat[1] mentioned. Marquette refers to the Ouabouskigon River, which runs into the Mississippi from the east about latitude 36° north,[2] referred to in the text as the Ohio. Marquette was told, by the natives, of Europeans on the lower part of the river who lived to the east and who had images and chaplets and played upon musical instruments and from whom they bought their goods.[3] The pipe given to Marquette by the Illinois, and its value as a safeguard is referred to in a letter of November 11, 1674, from Frontenac to Colbert.[4]

In 1676 Father Allouez refers to the Illinois offering to him the calumet. "The chief," he says, "advanced about thirty steps to meet me, holding in one hand a firebrand and in the other a feathered calumet. As he drew near he raised it to my mouth, and himself lit the tobacco, which obliged me to pretend to smoke."[5]

Father Louis Hennepin refers to the calumet of peace in 1679 among the "Iroquese," in the vicinity of Niagara, somewhat differently from Marquette's allusions. The latter refers in his travels to more than one place where his pipe was not received. Hennepin says: "It is a large tobacco pipe of red, black, or white marble, with a finely polished head. The quill, which is commonly two foot and a half long, is made of a pretty strong reed or cane adorned with feathers of all colours interlaced with locks of women's hair. Every nation adorns it as they think fit and according to the birds they have in their country. Such a pipe is a safe conduct amongst all the allies of the nation which has given it, and in all embassies the calumet is carried as a symbol of peace, the savages being generally persuaded that some great misfortune would befall them if they should violate the public faith of the calumet."[6]

Fathers Hennepin and Gabriel in 1679 visited Niagara Falls, "the like whereof," Hennepin says, "is not in the whole world."[7] The pipe is there illustrated, and if the illustration is correct, as it presumably is, would by its form indicate the Siouan type.

It should be remembered that Lafitau says the Iroquois and Indians near Quebec and on the St. Lawrence did not use the calumet of peace.[8]

McCulloh is probably correct in his assertion in reference to Hen-

[1] Marquette and Joliet, Historical Collections of Louisiana, Pt. 2, p. 290.

[2] Idem, Pt. 2, p. 292.

[3] Idem, Pt. 2, p. 293.

[4] Pierre Margry, Découvertes et Etablissements des Français, Retour de Louis Joliet, p. 260, Paris, 1875.

[5] Narrative of Father Claude Allouez, Historical Collections of Louisiana, p. 73.

[6] Louis Hennepin, A Voyage to North America, Archæologica Americana, I, p. 70.

[7] John Harris, Voyages and Travels, II, p. 907, London, 1705.

[8] Mœurs des Sauvages Amériqains, II, p. 314, Paris, 1724.

nepin's remark that in 1679 the calumet was in universal use among the Indians east of the Mississippi. He says: "It is not improbable, however, that at that time the French traders had both greatly extended its use and confirmed its character of conferring personal inviolability, as such a practice favored their traffic into the interior parts of the country."[1]

Membre in 1681, in referring to La Salle's voyage to the mouth of the Mississippi, refers to the "Arkansa" and "Taensa" as being half civilized. The Quinipissa, however, when La Salle sent messengers, let fly arrows at them. These people, he said, had never seen guns. With the Mohegans also the calumet was not received. The Indians on the lower river told them of people to the west who rode upon animals, and showed them two hoofs, which were those of horses.[2]

When they upon their return reached the Miami they learned of the Sieur de Tonty, who since leaving them had made several military expeditions.[3]

Baron Lahontan refers to the use of the calumet in Canada in a manner very similar to Marquette and La Salle, and gives some data which yet more strongly indicate that the calumet was of the Siouan type. The stem, he says, was 4 or 5 feet long, and the mouth or head in which the tobacco is held is 3 inches long, its figure approaching that of a hammer, the body being 8 inches long, and that the effect of the pipe was similar to that of a flag of truce with the French,[4] which strengthens the suggestion of McCulloh that this was a belief which the French would do everything to confirm.

La Salle, in describing the calumet dance of the "Arkansa," gives a very similar account to that given by Marquette as prevailing in the Illinois tribe, which is quite similar to a like custom described in Virginia, and would indicate an ancient practice. He says: "The Indians before dancing put poles around, as when linen is dried, and arrange on them all they are going to give. Then they bring two calumets made of red stones and filled with tobacco, being adorned with feathers of all colors. The chiefs and warriors have gourds full of pebbles, and also two drums. These are pots of earth covered with skin over the top. Those who have done great deeds strike a post, which is planted in the middle of the council place, with a club. Having told of their powers, they gave M. de La Salle their presents. If anyone lies the one who knows it wipes the post with a skin to remove the lie. The French, with the exception of M. de La Salle, also struck the post and related their achievements."[5]

The first reference to there being any special difference in the pipes used at a council and those used by the individual is probably that

[1] James H. McCulloh, Researches, p. 146, Baltimore, 1829.

[2] Father Zenobius Membre, Narrative of La Salle's Voyage Down the Mississippi, Discovery and Exploration of the Mississippi Valley, p. 174. Redfield, 1852.

[3] Idem, p. 178.

[4] Baron Lahontan, Some New Voyages into North America, p. 36, London, 1703.

[5] Pierre Margry, Découvertes et Etablissements des Français, Recit de Nicolas de La Salle, 1684, p. 553, Paris, 1875.

regarding Garangula, an Onondaga chief, who in 1684 sat at council "with his pipe in his mouth and the great calumet of peace before him."[1]

"M. de La Barre, in conference with Garangula at Kaihoga, asks him to smoke the calumet and to promise, in the name of the Senecas, Cayugas, Onondagas, Mohawks, and Oneydoes, to leave the French King's subjects unmolested. If they do not so agree, he says, he will declare war with them, and says this belt will confirm my words." Garangula, the spirited sachem who was a leader among the Onondagas and one of the head-men of the Confederacy of the Five Nations, does not take kindly to the terms, which he refuses in a spirited speech. He refers to the calumet which the Five Nations had given the governor's predecessor, and closes by the remark: "This belt preserves my words."[2]

The council here referred to grew out of trade jealousies more than anything else, for the French were anxious to cause the Iroquois to trade with them rather than the English, and the language employed upon one side and the other was unmistakable in its significance. La Barre informed the Indians that the Five Nations had robbed and abused all the traders that were passing to the Illinois and to the other nations—children of his king. Garangula was not to be outdone in the force of language employed, and informed La Barre that he thanked him in the name of the confederated tribes for bringing back into their country the calumet which the predecessor of La Barre had received from their hands. And referring to the protection of the calumet, he informed the governor that it was happy for him "that you left underground that murdering hatchet."[3]

Lahontan, in 1693, referring to the Indians making peace, says: "It is never until after a long war that the savages try to enter into a treaty, but after they see it is to their interest to make peace they send five, ten, or twenty warriors to make peace proposals to their enemies. Sometimes these envoys go by land, at other times by water, carrying always the great calumet of peace in the hand, after the manner of a cornet carrying his standard."[4]

In all treaties and councils between the whites and Indians, the pipe and wampum belt appear to go hand in hand. The pipe was a prerequisite to all functions with the Indians, whether among themselves or with strangers, whereas, as has been observed, the belt was often the witness of the specific contract. Its bands, beads, and color, the very arrangement of its design, each conveyed a specific message; not as a hieroglyph, for symbolism in this shape does not appear to have prevailed among the Indians using the belt, although they did at times resort to a rude ideography or pictography on rocks, bark, and skins; nor was it used as the quipu was said to be employed by the Peruvians and which could be read by certain persons learned in the art of deciphering the knotted cords—an art by the way apparently not con-

[1] Baron Lahontan, Some New Voyages into North America, I, p. 35, London, 1703.
[2] Cadwallader Colden, History of the Five Nations of Canada, p. 65, London, 1724.
[3] Idem, I, p. 68.
[4] Baron Lahontan, Mémoire de l'Amérique Septentrionale, p. 187, Hague, 1703.

fined to America. The belt was used to remind the orator for the time of his speech or lesson prepared before leaving the tribe on a mission, which, if forgotten, would be instantly corrected by his companions present, and when this belt had served its specific purpose, upon occasion it would be used as a witness to another and possibly entirely different contract. Lahontan has referred to these belts or "coliers," as the French usually designate them, as being "certain swathes of 2 or 3 feet in length by a breadth of 6 inches, decked with little beads made of certain shells that are found upon the seashore between New York and Virginia. These beads are round and as thick as a green pea, but are twice as long as a grain of corn. Their color is blue or white, and they are bored through like the pearl being run after the same manner upon strings which lie sideways to one another. Without the intervention of these *coliers* there is no business to be negotiated with the savages; for being altogether unacquainted with writing, they make use of them for contracts and obligations. Sometimes they keep a belt for a generation which has been received from their neighbors, and, in this respect, every belt has its own peculiar mark. They learn from the old persons the circumstances of the time and place where they were delivered, but after that is over they are made use of for new treaties."[1]

Maj. Richard Ingoldsby, commander in chief of the province of New York, on the 6th of June, 1692, presented to the "sachims of the Five Nations or cantons westward—namely, Maquaes, Oneydes, Onnondages, Cayouges, and Sinnekes—in the city hall of Albany, 6 gross of pipes and 100 pounds of tobacco."[2]

Sanvole, in Louisiana, in 1699, speaks of giving the Indians small presents of glass beads, knives, and hatchets, for conducting M. De Bienville to the Equinipichas (Choctaws living northeast of the mouth of the Mississippi) to whom he also sent a present of a capot, a calumet, beads, and other things proper to give such persons.[3]

This present, the capot, is not an uncommon occurrence apparently, and the same author refers to a present of a "habit rouge" and the calumet of peace.[4]

Father Gravier, who, in 1701, went over the same ground that Father Marquette had traversed in 1673, refers to the calumet and there being one for peace and another for war, the red signifying war. He goes so far as to say that upon presentation of the calumet even enemies will lay down their arms in the heat of combat. He describes the hollow wooden stem of the pipe as being the origin of the name calumet from a corruption of the word chalumeau, because it resembles a pipe or rather a long flute.[5]

That there were exceptions, however, to the sanctity of the calumet

[1] Baron Lahontan, Some New Voyages into North America, I, p. 36, London, 1703.
[2] Documents Relating to the Colonial History of New York, III, p. 842.
[3] Journal de M. Sanvole, Historical Collections of Louisiana, Pt. 3, p. 225.
[4] Idem, pp. 228, 232.
[5] John Gilmary Shea, Early Voyages Up and Down the Mississippi, Journal of a Voyage of Father Gravier, of the Society of Jesus, from the country of the Illinois to the mouth of the Mississippi, p. 130, Albany, 1861.

of peace is evidenced by Bernard de la Harpe, who records the breaking of the arm of Charles, the Canadian, in January, 1703, by a party of Indians who had presented the calumet, and the same night assassinated his companions.[1] The singing of the song of the calumet was not confined to the natives by any means, for in this they were imitated by the French[2] on more than one occasion.

Du Pratz, in his history of Louisiana, illustrates the manner of dancing the calumet on the Lower Mississippi in 1719 by the Tchitimachas (fig. 173).

He says: "I had an opportunity during this trip to satisfy my curiosity on the subject of the calumet of peace, of which I had heard so much from the old French inhabitants. There having been war with the Tchitimachas (a distinct linguistic stock located west of the mouth of the Mississippi), they asked for peace. A delegation arrived singing the calumet song, and with the calumet moving in rhythm they advanced, keeping time to the sound of the rattle."[3]

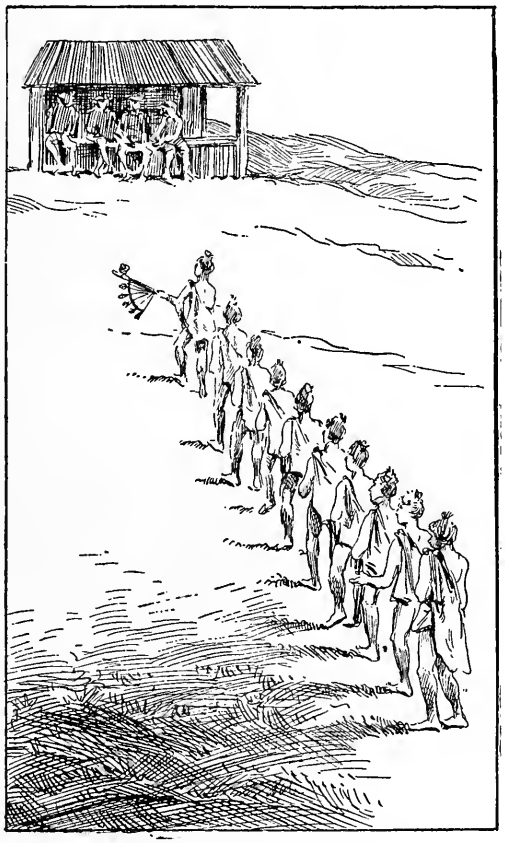

Fig. 173.
CALUMET DANCE.
After Du Pratz.
Histoire de la Louisiane, p. 105.

"The calumet," he says, "is the tube of a pipe at least 1½ feet long, covered with a skin composed of the head and neck of a wood duck, of which the many-colored plumage is exceedingly attractive, and at the end of the tube there is a pipe. At the same end there is fixed a kind of wing of the white eagle, in shape of a quarter circle, and at the end of each feather it is encircled by a hoop dyed a bright red color, while the other end has none."[3] After a brief description of the preliminaries, he says: "The speaker stood up while the assistant filled the pipe, and after smoking it, he dried it, and handed it to Mr. Bienville to do the same; then we all smoked it, after which the old man took the calumet and gave it to Mr. Bienville to keep."[4] On these occasions, he says, "they are dressed in their best, and never fail to hold in their hand a chichicois" (rattle), "which they also move in rhythm."[4] "The war calumet," he says, "is a pipe of the same material and shape excepting the color of the feathers, which are those of an aquatic bird, the flamingo. The

[1] B. F. French, Historical Collections of Louisiana, p. 30, New York, 1851.

[2] John Gilmary Shea, Early Voyages Up and Down the Mississippi, Sainte Cosme's Voyage on the Mississippi, p. 72, Albany, 1861.

[3] Le Page Du Pratz, Histoire de la Louisiane, I, p. 108, Paris, 1758.

[4] Idem, p. 105.

head of the bird is skinned, the feathers being of a whitish gray, which being dyed, only makes a light red, the hoop and tufts being black. The stem of the pipe is covered with the skin of a carancro" (carrion crow?), "as black as a blackbird and as big as a turkey.[1]"

There is difficulty in defining the word "carancro," unless it be a corruption of the English "carrion crow," though probably either the turkey, vulture, or black vulture is intended, as both are common in Louisiana; both are black and both are about the size of a turkey.

Charlevoix, in 1721, among the Onondagas, says there is perhaps no example of an agreement entered into after smoking the calumet ever being violated, but asserts that if it be presented in the midst of a battle by an enemy it may be refused. He describes the war calumet as being all red, or red on one side, and says that from the manner in which the feathers are arranged they know at sight the nation to which it belongs.[2]

Of wampum Charlevoix says that these shells were of two colors, from which the belts were made, and that the red ones were frequently sent when war was intended; and in reference to the red and white colors signifying war or peace, suggests that they have taken the hint from the colors of the English and the French. "It is even said," he remarks, "that we ourselves first introduced it amongst them."[2]

This author's explanation of the calumet differs somewhat from that generally suggested. He says: "The calumet is no less sacred among the Indians than the collar of wampum; it is even, if we believe them, of divine origin, for they maintain it was a present made them by the sun. It is more in use among the southern and western nations than among the eastern and northern, and is more frequently employed for peace than for war. Calumet is a Norman word, being a corruption of chaliorveau, and the calumet of the Indian is properly the stalk of the pipe, but under that name is understood the whole pipe as well as the stalk. The stalk is very long in calumets of ceremony, and the pipe has the shape of our old hammers for arms. It is commonly made of a sort of reddish marble, very easy to work, and found in the country of the Aiouez [Iowas, Sioux], beyond the Mississippi. The stalk is of a light wood, painted with different colors, and adorned with the heads, tails, and feathers of the most beautiful birds, which in all probability is only intended for ornament."[3]

That calumet customs were similar throughout a great part of the north and west there is abundant evidence, and the practice prevailed even as far south as Virginia. Robert Beverly, in 1722, enumerates five things which were always observed in receiving strangers, in order to determine whether they came on a peaceful or on a warlike mission.

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[1] Le Page Du Pratz, Histoire de la Louisiane, I, p. 118, Paris, 1758.

[2] Peter Francis Xavier de Charlevoix, Journal of a Voyage to North America, I, p. 321, London, 1761.

[3] Idem, p. 320.

"First. They take a pipe much larger and bigger than the common tobacco pipe, expressly made for the purpose, with which all towns are provided.

Second. This pipe they always fill before the face of the strangers, and light it.

Third. The chief man of the Indians takes two or three whiffs and hands it to the chief of the strangers.

Fourth. If the strangers refuse it, it is a sign of war.

Fifth. It it be peace, the stranger takes a whiff or two and hands it to the next great man of the town they come to visit; he after taking two or three whiffs gives it back to the next of the strangers, and so on alternately until they have passed it to all persons of note on each side, and then the ceremony is ended."[1]

In New York the calumet was used at a council in Albany, May 30, 1723.[2]

Cadwalader Colden, in 1724, speaks of the calumet being used by the Five Nations, and says it was used by the Indians before they knew anything of the Christians, and is at a loss to know how they were pierced and shaped before they had the use of iron.[3]

Father J. F. Lafitau, whose great work on the American Indians was published in 1724, refers to the Sioux having endeavored to fool a French officer by presenting him a dozen calumets. One of his Indians to whom he showed them called his attention to the fact that one of them was not twisted with hair, as the others were, and had besides engraved on its handle a snake, and assured him it was a sign of treason. But, he says, "they tell me it is a greater sign of war when they paint the handle red between the hairs." The Europeans, he says, "up to the present time, who have traded with the Illinois and the other people of Louisiana have used the calumet and have participated in all its ceremonies in order to obtain liberty to pass in peace in their commercial transactions." He "sees in the custom remains of paganism and a marked idolatry," and thinks "it should be abolished entirely among the Europeans and nations who have embraced or who may want to embrace Christianity."[4]

That the sanctity of the calumet was not always respected there can be no doubt, even along the Mississippi, where instances have been cited of refusal even to communicate with those carrying a calumet. Lafitau says that if in council between ambassadors and the Indians concerning the making of peace the council decides upon war it is a great misfortune for the ambassadors, for the law in that case only protects them as long as the matter is in abeyance, but being negatived they knock them in the head where they are, though they often take honorable leave of them and then send and have them assassinated a few days

[1] History of Virginia, I, p. 157, Petersburg and Richmond, 1722.

[2] Documents relating to the Colonial History of New York, V, p. 695.

[3] The History of the Five Nations, p. 55, note, London, 1724.

[4] J. F. Lafitau, Mœurs des Sauvages Amériqains, II, p. 335, Paris, 1724.

march from the village. He remarks that it is not customary to burn or make slaves of ambassadors, though the Iroquois burned some of those accompanying the Chevalier d'O, whom the Comte de Frontenac had sent to them, and would have burned him if he had not taken refuge among the English. The law of nations, he says, is more respected among the nations living in Louisiana along the borders of the Mississippi, who observe the custom of the calumet, which the Iroquois have not, nor have the natives near Quebec and on the lower St. Lawrence.[1]

Lafitau lived many years among these people, from 1712 on. He studied their character and was thoroughly acquainted with them, though his reference is probably to the dance as a Siouan function rather than that of other tribes, the pipe offering became common eventually between the whites and natives throughout the country and acted as a truce. Lafitau refers to the details of a religious dance witnessed by Le Sieur de Leri among the Caribs about this period, which appears to have been similar to the calumet dance of the Sioux. "These Caribs," he says, "in advancing and jumping forward and retreating, took a stick about 4 or 5 feet long, at the end of which they had the dry herb petun, and lighted it, turning around and blowing the smoke on all the other savages."[2]

Lionel Wafer describes a most peculiar and unique method of smoking in 1680 that was indulged in by the natives of the Isthmus. The dried tobacco leaves were "stripped from the stalk, and laying two or three leaves upon one another they roll all up sideways in a long roll, yet leaving a little hollow; round this they roll other leaves one after another in the same manner, but close and hard, till the roll is as big as one's wrist and 2 or 3 feet in length. Their way of smoking when they are in company together is thus: A boy lights one end of a roll and burns it to a coal, wetting the part next to it to keep it from wasting too fast; the end so lighted he puts into his mouth, and blows the smoke through the whole length of the roll into the face of every one of the company or council, though there be two or three hundred of them. Then they, sitting in their usual posture upon forms, make with their hands held together a kind of funnel around their mouths and noses; into this they receive the smoke as it is blown upon them, snuffing it up greedily and strongly, as long as ever they are able to hold their breath, and seeming to bless themselves as it were with the refreshment it gives them."[3]

To return however to the calumet. One of the early accounts of the locality from whence the red pipestone was derived is recorded by Du Pratz and vouched for by officers of the expedition made by Le Bourgmont to the Padoucas, yet will likely be read with incredulity. "That there was," he says, "a high bluff in which was a mass of red stone flecked with white, like porphyry, with this difference, that this of which

[1] J. F. Lafitau, Mœurs des Sauvages Amériqains, II, p. 314.

[2] Idem, II, p. 136, quoting Leri's Histoire de l'Amérique.

[3] Lionel Wafer, A New Voyage and Description of the Isthmus of America, p. 80, London, 1704.

we speak is almost as soft as tufa. It is covered with another stone which has no merit. The natives who knew its worth endeavored to cut it with blows from their arrows, and when pieces dropped into the water, they found it by diving. When they got a piece large enough from which to make a calumet, they made it by means of a knife and awl. The stone works easily and resists a hot fire."[1]

This description answers correctly the characteristics of catlinite and its bed, which lies between layers of quartzite at Couteau des Prairies. This red stone, often spoken of by early writers as a red marble, has a brilliant color and is susceptible of a high polish, and there is evidence in the primitive burials of a large area that from an early period there was an extensive trade in it. Though there does not appear ever to have been such distribution of other pipes as there was of those made of clay such as were used by the English who, on July 6, 1742, in the meetinghouse in Philadelphia at a council held by Lieut. Governor George Thomas and certain gentlemen with Onontogoes, Caiyoquos, Oneidas, Senecas, Tuscaroros, Shawanoes, Canestogas, etc., gave away 1,000 tobacco pipes, 200 pounds of tobacco, and 100 tobacco tongs, this gift being duplicated for the land on the east side of the Susquehanna River.[2]

The ceremony of intertribal smoking in the manner related is said to have occurred during the governorship of the Hon. George Clinton on July 8, 1751, between the Catawbas and the Six Nations in Albany, New York. "The Catawbas came down from their quarters singing, with their colors pointed to the ground, and having lit their pipes, the king and one more put them in the mouths of the chief sachems of the Six Nations who smoked out of them. The chief sachem of the Senecas lit a pipe and put it in the mouths of each of the Catawbas, who smoked out of it and then he returned it among the Six Nations.[3]

Woodrow Wilson gives a good description of the conditions existing between the French and the English in 1751-1753: "The strength of the French lay in their command of the water courses which flanked the English colonies both north and west, from the Gulf of St. Lawrence to the mouths of the Mississippi. There were French posts at Niagara and Crown Point on Lake Champlain, and English posts were at Oswego and on the Hudson. The English were pressing toward the western mountains and down into Virginia to the Shenandoah Valley; quite three hundred traders went into Ohio every year. Du Quesne established Presque Isle in 1753. Washington, sent by Governor Dinwiddie, met the French at Fort Le Bœuf, warning them to leave the country, and returned January, 1754. The French established Fort Du Quesne in 1754, Washington being defeated at Great Meadows. Braddock made his campaign in 1755 against Du Quesne and was badly defeated."[4]

Sir William Johnson at a meeting with the Six Nations on February 23, 1756, gave them the largest pipe in America, made on purpose, and

[1] Histoire de la Louisiane, I, p. 326.

[2] Cadwallader Colden, History of the Five Nations, Pt. 2, p. 57, London, 1747.

[3] Documents Relating to the Colonial History of New York, VI, p. 724.

[4] Woodrow Wilson, Colonel Washington, Harper's Magazine, March, 1896.

said to them: "Take this pipe to your great council chamber at Onondaga: let it hang there in view, and should you be wavering in your minds at any time, take and smoke out of it, and think of my advice given with it, and you will recover and think properly,"[1] and on July 23, 1756, in the proceedings of a council with "Pondiac" and chiefs of the Ottawas, Pontawattamies, Hurons, and Chippewas, the chiefs being all seated, Sir William Johnson caused Pondiac's pipe to be lighted, which, after being handed around by the interpreter to all present, he addressed them.[2]

"On September 19, of the same year, at Fort Johnson, New York, the Mohawks of both Castles, the Oneidas, the Cayougas, and two Seneca sachems with the River Indians met in council, and sent to acquaint Sir William that they proposed to deliver the message agreed upon on the 18th to the Cherokee deputies. When Sir William came in and all were seated, the four Cherokees were introduced to the council by Captain Montour, and taking seats in four chairs placed purposely for them, Sir William lighted the calumet, or pipe of peace and friendship, and after smoking a whiff presented it to the four Cherokee deputies, holding it to them while each drew a whiff, then the gentlemen present took it and Mr. Montour handed it round to every Indian present. The tobacco from whence it was filled was then put into a bag to be carried home with the calumet by the Cherokees,"[3] as showing the then existing international jealousies. A desire was expressed at this meeting to keep a knowledge of it from the French.

Jonathan Carver, who in 1763 endeavored to cross the continent and to acquaint the world with the geography of the interior of the country and the lands acquired after the peace of 1763, says: "I knew that many obstructions would arise in my scheme from the want of good maps and charts; for the French while they retained their power in North America had taken every artful method to keep all other nations, particularly the English, in ignorance of the concerns of the interior parts of it, and to accomplish this design with greater certainty they had published inaccurate maps and false accounts."[4]

Robert Rogers says: "When they use collars or belts of wampum, it must be a matter of national importance."

He refers also to the customs of the natives, and also to the calumet of peace as being of no less importance in many transactions—"relative to war and peace. The bowl of this pipe is made of a soft red stone, which is easily wrought and hollowed out; the stem is of cane, elder, or some light wood, painted with different colors, and decorated with the heads, tails, and feathers of the most beautiful birds. The use of the calumet is to smoke either tobacco or some bark, leaf, or

[1] Documents Relating to the Colonial History of New York, VII, p. 64.

[2] Idem, II, p. 854.

[3] Idem, VII, p. 327.

[4] Jonathan Carver, Travels through the Interior Parts of North America, p. xxiv, introduction, London, 1781; reprint edition, New York, 1838.

herb, which they often use instead of it, when they enter into an alliance. When they treat of war the whole pipe and ornaments are red. Sometimes it is red only on one side, and by the disposition of the feathers, etc., one acquainted with their customs will know after first sight what the native who presents it intends or desires. Smoking the calumet is also a religious ceremony upon some occasions, and in all treaties is considered as a witness between the parties."[1]

"On July 1, 1765, a Frenchman arrived" in the colony of New York "from the Illinois with a pipe and speech from thence to the Kickapoos and Mosquattamis. * * * Then they spoke on several pipes and belts. Pondiac (Algonquin) gave a large pipe with a belt of wampum tied to it."[2]

In 1766 "the Onondaga speaker lighted a calumet of peace which Sir William (Johnson) left in their hands many years ago for that use, and handed it to the western Indians, after which the speaker, with a bunch of wampum, addressed himself to the western nations."[3] This pipe was probably the same one referred to as presented to the Indians on February 23, 1756.

Carver also describes the calumet and its decorations, but adds nothing to the description of its appearance beyond what has already been set forth. He refers to the different methods employed in decorating the calumet and the fact of the Indians' ability to tell at first sight to what tribe it belongs. He is more explicit, however, in describing the ceremony of the smoke. "The assistant or aid-de-camp of the great warrior, when the chiefs are assembled and seated, fills the pipe with tobacco mixed with herbs, taking care at the same time that no part of it touches the ground. When it is filled he takes a coal that is thoroughly kindled from a fire which is generally kept burning in the midst of the assembly and places it on the tobacco." Having done so, "he presents it to the hereditary chief, who, having taken two or three whiffs, blows the smoke from his mouth, first toward heaven and then around him upon the ground."[4] It is then presented to the others of the council by the bearer, and they only touch it with their lips.

Referring to the Southern tribes, the Talapouches and Alibamons, Bossu, in 1768, speaking of their meeting persons, says when you land they give you the hand in presenting the calumet, and when you have smoked they ask the subject of your travels.[5]

The head priest, he says, "with a dignified step, daily went forward before the sun rose with the calumet in his hand and blew the first mouthful of smoke toward it."[6] The equipment of these Indians for war was of the simplest character—"a bearskin for a bed, a beef [buffalo?] skin

[1] Robert Rogers, A Concise Account of North America, pp. 223, 224, London, 1765.

[2] Documents Relating to the Colonial History of New York, VII, pp. 780, 782, 783.

[3] Idem, VII, p. 863.

[4] Jonathan Carver, Travels through the Interior Parts of North America, p. 224, New York, 1838, from the third London edition.

[5] M. Bossu, Nouveau Voyages aux Indes Occidentales, II, p. 17, Paris, 1768.

[6] Idem, I, p. 43.

for covering, a wild-cat skin to hold the calumet, and a club or small ax for making their cabins."[1]

The "Akanças" received Bossu with the calumet dance, first having tattooed him; he thereafter smoked the calumet[2] as though tattooing was a prerequisite or initiation to the pipe ceremony. In referring to the drowning of several soldiers he says he also would have met the same fate had it not have been for a generous "Akanças," who, without fearing the rigor of the weather, jumped into the water and pulled him out by his capot, "a linen garment of travelers resembling a capuchon."[3]

One can with difficulty refrain from laughing at Bossu's description of the function of the calumet dance given by the Missouri Indians after their return from a raid to the southwest, where they had literally cleaned out a Spanish mission and probably killed all those guarding it. He says: "They brought here the ornaments of the chapel, in which they were dressed. The chief wore over his skin the best chasuble, having the patin hanging from his neck pierced by a nail and answering the purpose of a gorget; he marched at the head of the procession, having on his head a feather bonnet and pair of horns; he was followed by others wearing stoles and maniples around their necks. Following these were three or four savages clothed in surplices. The acolytes, contrary to usage, marched at the tail of the procession, and not finding themselves sufficiently decorated, danced forward in step, holding either a cross or a chandelier in their hands. Not appreciating the value of sacred vessels, they had hung a chalice at a horse's neck, on the principle of a bell. Imagine the ridiculous spectacle witnessed by the order of this queer procession arriving at the house of M. Boisbriant, lieutenant of the King, marching in step, with the great calumet of peace solemnly carried in front."[4]

Albert James Pickett informs us that "the grand chief of the Natchez bore the name of the sun. Every morning as soon as that luminary appeared he stood at the door of his cabin, turned his face toward the east and bowed three times, at the same time prostrating himself to the ground. A pipe, which was never used but upon this occasion, was then handed to him, from which he puffed smoke, first toward the sun and then toward the other three quarters of the world."[5]

Ulloa says that among the natives of Peru the use of tobacco was very moderate, and that the people of the more elevated regions do not smoke. In some of the lower parts of the country, where the natives do use it, he says, "It is astonishing that tobacco, a product of these countries, has not a more extended use among the Indians, considering it has become so necessary in Europe."[6]

He thinks that the offering of the pipe to visitors was similar to that indulged in among Orientals, accompanying it with coffee and other drinks, which were similar to the Indian customs of hospitality with

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[1] M. Bossu, Nouveau Voyages aux Indes Occidentales, I, p. 118, Paris, 1768.

[2] Idem, I, pp. 110, 122. [3] Idem, I, p. 130. [4] Idem, I, p. 176.

[5] A History of Alabama, and incidentally of Georgia and Mississippi, I, p. 130, Charleston, 1851, quoting Charlevoix.

[6] Memoirs Philosophiques, p. 59, Paris, 1787.

the pipe, and indicates a common origin, no matter how far back from our time. The shape of pipe bowls and of stems also differ from the shape of the European pipe. He thinks the use of tobacco was not introduced into Europe by the discovery of America.[1]

Among the Southern Indians Pickett speaks of the "council house where the inhabitants were accustomed to take the black drink. When the drinking began tobacco contained in pouches made from the skins of the wild-cat, otter, bear, or rattlesnake was distributed among the assembly, together with pipes, and a general smoking began. The king began first with a few whiffs from the great pipe, blowing it ceremoniously first toward the sun, next toward the four cardinal points, and then toward the white audience; then the attendants passed the pipe to others of distinction."[2]

We see here a reference to the general aboriginal belief in the six quarters of the universe, the above and the below, in addition to the four cardinal points, or the four winds, all being equally important, according to primitive ideas. William Bartram refers to smoking with a chief a pipe, the "stem of which was about 4 feet long and was sheathed in a beautiful speckled snake's skin, adorned with feathers and strings of wampum."[3]

An early reference to the calumet custom is the quaint description given by John Filson in his History of Kentucky, as translated by Parrand, of a meeting held at Fort St. Vincent, April 15, 1784, between Thomas J. Dalton, who said to the Piankashaws, "The white men—Americans, French, Spanish, Dutch, and English—smoke the pipe of peace; the tomahawk is buried, and we are now all friends. In eighteen days I quit the Wabash to see my big chief at the falls of the Ohio. Here is tobacco that I give you; smoke it, and consider what you will do." Then he gave a collar of wampum, blue and white, and said, "Piankashaw, talk; talk to the Americans." The chief of the Piankashaws said: "We accept your wampum belt. We accepted the tomahawk of the English. We smoke, as brothers, the peace pipe which we give you. See, O father, the pipe which gives us joy. Smoke it yourself. Our warriors are pleased that we give it to you. We smoke your pipe." He closes his oration in a somewhat startling manner, however, saying, "We ask of you a little taste of your milk, that our warriors may see it comes from your breast. We are born and raised in the woods and can never learn to make rum. God made the white man master of the world. They make everything; and all of us love rum."[4]

In 1789 Georg Heinrich Loskiel speaks of the peace pipe, or calumet, as it was called by the French, as having a head of red marble, the red of which is a sign of blood, which they would not send as a peace emblem, but cover it over with white clay or chalk. This pipe was 6 or

[1] Memoirs Philosophiques, p. 59.

[2] A History of Alabama, I, p. 102, quoting Bartram.

[3] William Bartram, Travels through North and South Carolina, p. 349, Dublin, 1793.

[4] Histoire de Kentucke, p. 101, translated from English of John Filson, by M. Parrand, Paris, 1785.

8 inches long and 3 inches high, its stem being 4 feet long, with a pretty band wound around it, with porcupine quills and white corals worked into the band, in which latter work the women endeavor to show their skill.[1] The people of whom he spoke were the Delawares and Iroquois.

In the extreme northwest of the continent, Mackenzie, in 1792, gave the natives of the Peace River a pipe as a token of peace, just as all his predecessors had done throughout the continent for one hundred and fifty or more years.[2] He also informs us that among the Crees even the funeral rights begin with smoking, as do all other solemn ceremonies, and conclude with a feast.[3]

Mackenzie says a contract which is solemnized by the ceremony of smoking never fails of being faithfully fulfilled, and if a person previous to going on a journey leaves the sacred stem as a pledge of his return, no consideration whatever will prevent him executing his engagement.[4]

One of the most careful and particular accounts of Indian smoking which has come down to us is that of Mackenzie describing its practice among the Kinsteneaux. He says: "The owner of the dwelling opens his medicine bag, which contains a piece of Brazil tobacco, several roots and simples, which are in great estimation, and a pipe. These articles being exposed and the stem resting upon two forks, as it must not touch the ground, the master of the lodge sends for the person he most esteems, who sits down opposite to him. The pipe is then filled and fixed to the stem. A pair of wooden pincers are provided to put the fire in the pipe, and a double-pointed pin to empty it of the remains of tobacco which is not consumed. This arrangement being made, the men assemble and sometimes the women are allowed to be humble spectators, while the most religious awe and solemnity pervades the whole. The assistant takes up the pipe and presents it to the officiating person, who receives it standing, and holds it between both his hands. He then turns himself to the east and draws a few whiffs, which he blows to that point; the same ceremony he observes to the other three quarters, with his eyes directed upward through the whole of it; he holds the stem about the middle, between the three first fingers of both hands, and raising them upon a line with his forehead he swings it three times around with the sun, when, after pointing it and balancing it in various directions, he reposes it on the forks. The assistant then takes up the pipe and holds it to the north of the officiating person, who, after smoking three whiffs out of it, utters a short prayer, and then goes around with it, taking his course from the east to west, to every person present, who individually says something to him on the occasion, and thus the pipe is generally smoked out. After turning it three or four times around his head he drops it downward and replaces it in its original situation."[5]

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[1] Georg Heinrich Loskiel, Geschichte der Mission der Evangelischen Brüder, p. 202, Barby, 1789.

[2] Alexander Mackenzie, Voyage from Montreal through the Continent of North America, p. 124.

[3] Idem, p. xciv. [4] Idem, p. xcviii. [5] Idem, p. xcvii.

Lewis and Clarke, in 1804, in their expedition up the Missouri after the acquisition of Louisiana, record a peculiar custom among the Shoshones, who take off their moccasins before smoking with strangers.[1] These officers were the first ones who presented the flag as an emblem of peace to this tribe.[2] The leaders of this expedition in their journey up the Missouri smoked the pipe of peace with the Tetons (Sioux), and in describing the pipe raised on forked sticks, say: "The down of swan was scattered under it. They first pointed the pipe toward heaven and then to the four quarters of the globe, then to the earth, made a short speech, lighted the pipe, and presented it to us."[3] They feasted with the Indians and describe their meals, which were scant at times, though dog appears to have been a popular and common dish during a great part of the journey.

Sir John Franklin, on a journey to the Polar Sea in 1820, refers to the Cree customs being similar to those recounted of them by Lewis and Clarke, though he says the bearberry was mixed with tobacco; the one smoking passing the pipe to his left-hand neighbor, and when it reached Franklin and his interpreter who were seated at the door, they were requested to keep the head of the calumet within the threshold.[4]

John D. Hunter, who lived many years as a prisoner among the Kickapoo who had captured him, and who subsequently lived with the Kansas and the Osages, refers to the men often amusing themselves by "making bowls and pipes of clay for their individual use, which are burned."[5] "The eldest person always enters a council lodge first, and is followed by the other counselors much according to seniority in the most perfect order. They then seat themselves cross-legged on mats, which are arranged circularly around the lodge for the purpose. The chief then lights the national pipe, takes three whiffs, passes it after smoking to the next greatest person present, and then it is passed around in the midst of the most perfect silence."[6] If embassies arrive they are given the most honorable position in the lodge, and after the ceremony of smoking they unfold their mission.[7]

The Rev. J. Owen Dorsey records an act of worship among the Sioux which, he says, is of daily occurrence when one is about to smoke his pipe. "He looks to the sky and says 'Wakanta, here is tobacco.' Then he puffs a mouthful of smoke up to the sky, after which he smokes as he pleases." They also make offerings of tobacco by throwing a small quantity in the fire.[8] Mr. Dorsey refers to the Shoshoni chief with whom Captain Lewis smoked, lighting his pipe of transparent

[1] Expedition to the Rocky Mountains, I, p. 364, Philadelphia, 1814.
[2] Idem, p. 365. [3] Idem, p. 84.
[4] John Franklin, Narrative of a Journey to the Shores of the Polar Sea in the years 1820, 1821, 1822, p. 68, Philadelphia, 1824.
[5] Manners and Customs of Several Indian Tribes located west of the Mississippi, p. 98, Philadelphia, 1823.
[6] Idem, p. 320. [7] Idem, p. 326.
[8] A Study of Siouan Cults, Eleventh Annual Report of the Bureau of Ethnology, 1894, p. 425.

green stone.[1] They smoked towards the invoked object and placed gifts of killickinnick upon it.[2] They presented the pipe with the mouthpiece toward the power invoked. The Omaha and Ponka used to hold the pipe in six directions while smoking toward the four winds, the ground, and the upper world.[1]

Certain persons have care of each the peace and the war pipe among the Omaha, and there are others who are designated to light the pipe. Certain words must at times be used in taking out the pipes; if not followed, misfortune overtakes the delinquent. If the proper parties are not present ceremonies must often be delayed. To learn the laws of the pipe takes four days.[3]

The importance of the presentation of the pipe with all due ceremony extends among the Omaha to the buffalo or other game, according to Stephen H. Long, who says: "The party having approached as near the herd as they suppose the animals will permit without taking alarm, they halt to give the pipe bearer an opportunity to perform the ceremony of smoking, which is considered necessary to their success. He lights his pipe and remains a short time with his head inclined. The stem of the pipe extends toward the herd. He then smokes and puffs the smoke toward the bisons, toward the heavens, the earth, and finally to the cardinal points successively. These last are designated by the terms sunrise, sunset, cold country, and warm country, or they designate them collectively by the phrase of the four winds, Ta-da-sa-ga-to-ba."[4]

The pipes are cut, he says, from the red, indurated clay which they procure from the pipestone branch of the Sioux River, the mass being readily cut with a common knife.[5]

One of the most minute descriptions of the calumet dance which the writer is conversant with, is that of Major Stephen H. Long, referring to the Omaha who belong to the great Siouan family. He says:

The calumet dance, Nin-ne-na-ba-wong, is a favorite dance. It is usually performed by two individuals, in honor and in the presence of one of their own or of a neighboring nation in the expectation of receiving presents in return. A person who intends to perform this dance sends a messenger, bearing a small skin containing tobacco to fill a pipe, to the individual whom he intends to honor. If the proposed compliment should not be acceptable, it is refused in the most courteous manner, with excuses based upon poverty and with many thanks for the honor intended. If, on the contrary, the tobacco should be accepted and smoked, the act shows that the visit also will be acceptable, and a time is fixed for the performance of the ceremony. At the appointed time the dancers, with two selected companions, repair to the place of their destination and are invited into the lodge of the person addressed. After a short time a calumet is placed upon a forked support, which is driven into the soil

[1] Eleventh Annual Report of the Bureau of Ethnology, p. 375.

[2] Idem, p. 373.

[3] J. Owen Dorsey, Omaha Sociology, Third Annual Report of the Bureau of Ethnology, p. 221.

[4] Stephen H. Long, Expedition from Pittsburgh to the Rocky Mountains, I, p. 208, Philadelphia, 1823.

[5] Idem, I, p. 332.

in the back part of the lodge. Notice is then given to the bearer of the calumet respecting the time when it will be convenient for the dance to take place. The bearer of the calumet is now considered as the father, and addresses the individual whom he is about to honor by the title of son, presenting him with some valuable articles, such as a gun, kettle, blankets, clothing, and ornaments for his youngest child, who is destined to represent the father, or the adopted son, at the ensuing ceremony.

At sunset the calumet is taken from the forked stick, or support, enveloped like an infant in swaddling clothes, and placed carefully in a bed prepared for its reception; a lullaby is then sung, accompanied by the music of the rattle, for its quiet repose. On the following morning it is awakened by a song, with the same music, and again consigned to its forked support. The appointed day having arrived, a space of sufficient diameter is inclosed by a screen of skins for the dance; a post is fixed in the earth, near the entrance to the area. Around this area the principal men of the nation seat themselves; the adopted son leads in his youthful representative, and the two dancers, decorated with paint and entirely destitute of clothing, with the exception of the breech-cloth, commence the dance. They are each provided with a decorated calumet stem and a rattle of dried skin or a gourd, containing pebbles, with which to keep time with the music of the gong and to the vocal chanting of the musicians of the village. They dance in the ordinary manner of the Indians and pass backward and forward between the entrance and back part of the area, endeavoring to exhibit as much agility as possible in their movements, throwing themselves into a great variety of attitudes, imitative of the actions of the war eagle, preserving at the same time a constant waving motion, with the calumet in the left hand and agitating the gourd in the right, more or less vehemently, agreeably to the music. Warriors and braves will now bring forth presents of horses, guns, etc. The bridle of the horse is attached to the post by the donor, who receives the thanks of an old crier stationed there to perform that duty. The music now ceases while the donor strikes the post and recounts his martial deeds, and boasts of the presents which he has made at different times on similar occasions. Sometimes during a ceremony a warrior will take the gong from the performer and strike upon it as many times as he has achieved brave and generous actions; he then sits down, and no one must dare touch it but such as can strike it more frequently than the first; if this is done the gong is returned to the performer. The calumet dance sometimes continues two or three days, but each night the calumet is consigned to its repose in the bed with the same ceremonies as the first night. When all the presents have been made which the dancers have reason to expect, they depart immediately with them to their own nation or lodge. Instead of striking the post the donors sometimes strike lightly upon the persons of the dancers. The presents made at these dances are sometimes quite considerable. Ong patunga once danced the calumet to Tarrarecawaho, the grand Pawnee chief, and received from him between eighty and ninety horses. The Pawnees are, indeed, distinguished for their liberality and dexterity at this ceremony. They gave one hundred and forty last autumn to the Otoes who performed this dance at their village, and gave so much satisfaction to many individuals of this nation as to receive extraordinary presents from them. On this occasion one person, in the warmth of his feelings, brought forth his child and presented it to them as the most precious gift in his power to bestow. The Pawnees accepted this gift, but on their departure they returned the child to its parents, accompanied by the present of a fine horse, upon which it was mounted.[1]

Maj. J. W. Powell informs the writer that the Shoshonian family, many of the Pueblos, Navajos, Apaches, and Sioux, in smoking, pass

[1] Stephen H. Long, Expedition from Pittsburgh to the Rocky Mountains, I, p. 332, Philadelphia, 1823.

the pipe to the left of the one smoking; at times it is passed from the smoker back to the officiating chief, when he passes it to his right, but to the left of the smoker. The significance is that it must go with the sun.

Maximilian von Wied, in referring to the Blackfeet, says: "If you visit an Indian in his tent, the pipe is immediately taken, which in company is generally circulated to the left. The owner of the house often blows the smoke to the sun, then to the earth. One takes a few whiffs and passes it on. The smoke is drawn right into the lungs. The last smoker never passes it back, but gives it to the one sitting in the row opposite to him and it goes again to the left."[1]

Father P. J. De Smet refers to the calumet customs as they existed in 1841 among the "Pottawatomies or Northern Nations (Algonquins), its sacredness, its colors, feathers, and always being part of all religious ceremonies."[2]

Catlin, in one of his descriptions, says the pipe is ornamented with the quills of the war eagle and wrapped in many bandages, and is only used in making treaties.[3] He says, concerning the smoking of the Sioux: "In their native state they are excessive smokers and would seem to be smoking one-half of their lives. There are many weeds and leaves and barks of trees which the Indians dry and pulverize and carry in pouches and smoke to great excess, and in several of the languages when thus prepared is called k'nick k'neck."[4]

Miss Alice Fletcher informs the writer that among the Dakotas and Sioux the pipe is an implement of ceremony, and so employed; and that for all ceremony the pipe is prominent. The Moki, Dr. J. W. Fewkes informs the writer, use different herbs in their ceremonies, at times as many as six. Having given a chief some spruce from near Santa Fe, New Mexico, the latter said it was good for the pipe, because it was the most eastern place he knew, and they desired herbs from as great distances as possible from each of the four world quarters, as it made the best medicine. Ordinarily they smoke *Nicotiana attenuata*, but in formal smoking they use no manufactured American tobacco. The pipe bearer lights the pipe with a corncob and carries it in both hands with the bowl down and away from him; he hands it to the chief, who smokes six whiffs to the north, west, south, and east, then up and down on the altar. The chief then hands the pipe to the one on the left. The last man in the row hands it back to the pipe bearer. If there is a second line of persons on the opposite side of the altar, the pipe bearer smokes and passes it to his right; but it must be another pipe. The above refers to a ceremonial smoke. There is one head chief; the pipe

[1] Maximilian von Wied, Reise in das Innere Nord Amerika, I, p. 570, Coblenz, 1839.

[2] A Narrative of a Year's Residence Among the Indian Tribes of the Rocky Mountains, p. 157, Philadelphia, 1843.

[3] George Catlin, Letters and Notes on the Manners and Customs of the North American Indians, I, p. 235, New York, 1844.

[4] Idem, I, p. 234.

bearer is the next to this chief in dignity. The pipe used in the first eight songs of the sixteen-song dance is of the rectangular character, and appears to be of no special significance, but in the middle of the ceremony, after the eighth song has been sung, the pipe bearer hands a lighted coal to the chief in response to his call, who then puts the coal in a long, straight, conical pipe holding six herbs; placing the big end in his mouth, blows six puffs between the ears of a stone fetish of a mountain lion. No one else smokes this pipe, which is sacred.

The same sacred character, apparently, is attributed to the pipe of ceremony by all the pueblo people as is given to it by the Moki, who again, at the great dance of the winter solstice, which lasts from four to nine days and nights, used the tubular pipe, as they probably do in all ceremonious dances; and in this veneration of the implement their views appear to accord with those of all other Indians.

The conclusion is warranted that the general ceremony of smoking was similar at points far distant from each other; as, for example, from southern Virginia to the country of the Iroquois, from the mouths of the Mississippi to the Wisconsin River, and through a large part of New Mexico, which would indicate a great antiquity when we consider the constant state of war in which the American Indian appears to have been engaged.

CATLINITE AND SIOUAN TYPES.

Beginning with the earliest records of the North American Indians, continuously to recent times, references are made to pipes of red marble, red stone, and red indurated clay, which there is every reason to infer related to the stone now universally known as "catlinite," named after Mr. George Catlin, who lived many years among the Indians, painting their portraits in various costumes of peace and war, as they appeared on their hunting excursions and in their games, as well as in following their ordinary everyday vocations. These catlinite pipes have been found over a wide area, in Indian graves and of several forms, though the typical pipe of this material is the well-known rectangular pipe of the Sioux, those of other forms probably being comparatively modern. Though the material has been so long known and under so many different names, and such wonderful stories have been told of it, the exact locality of the quarries from whence it is derived has been known scarcely fifty years. It is near the town of Pipestone, in southwestern Minnesota. These quarries have quite recently been visited and most carefully surveyed and inspected by Prof. W. H. Holmes, who brought to the U. S. National Museum a section of the material, showing its location and structure in the bed. It is an indurated clay, forming a stratum about 12 inches thick, lying between beds of quartzite. It is of markedly laminated character, scarcely 2 inches of which is of sufficient thickness and suitable for carving pipes. The

ancient pits from which this pipestone has been taken extend for a distance of three-quarters of a mile, the older pits varying from 20 to 40 feet in width and from 4 to 10 feet deep, almost all of them now being partly filled with water. The more recent pits are somewhat deeper, owing to their not having had time to fill in from the effects of seasonal changes. The dumps all over the edges of this ledge where refuse material has been thrown are from 18 inches to 4 feet high. The pits may be numbered by the hundreds. Upon removing the soil in many of them Professor Holmes found notched stone sledges of quartzite pebble and numberless spheroidal hand-chipping hammers used in the quarrying and dressing process through which the material went to make it suitable for final dressing. The quarries are still visited by the Sioux, who annually travel 200 miles or more from their reservation to obtain the material to make into pipes. In one of the ancient pits Professor Holmes found indications of the burial of horses and cattle, and near the quarries are several low burial mounds from 20 to 40 or more feet in diameter, and scattered near the pits are numerous lodge sites, indicated by circular or oblong depressions.[1]

While little appears to be positively known concerning the length of time during which the quarries have been worked, there can be little doubt that they have been in use from a period prior to the advent of the French on the Mississippi. The locality of these quarries is in the territory dominated by the Sioux, and they alone appear from the earliest times to have had control of the "pipestone" of which the typical Sioux pipe is yet made, and little reliance can be placed in the statement of its ever having been a neutral site. Large blocks of the quartz have been sledged off and thrown upon the various dumps along the outcrop, leaving the catlinite, where it is of sufficient density, to be worked into any necessary objects of ornament. There are some large bowlders in the immediate vicinity of the quarries, and upon many of them are visible aboriginal paintings and drawings of both animate and inanimate figures.

Catlinite has by some writers been said to be soft when taken from the quarries and to become harder on exposure to the atmosphere; but the writer's experience in working this stone would indicate that the difference in working fresh or dry stone is insignificant, as pieces which have dried for years are yet nearly as soft as commercial soapstone. Catlinite is quite a soft indurated clay, slightly harder than soapstone; easily cut with a steel knife, or scraped by means of sharp-edged tools of stone or shell, or ground by stone or sand into any desired shape; and by pecking with a stone hammer this material may be formed with perfect ease into any shape, provided care be taken not to strike the blow in the plane of its lamination, along which the cleavage is decidedly pronounced, and its thin lamellar structure becomes distinct and apt to fracture in thin sheets. At any angle to this cleavage plane, however, the stone resists quite severe blows of the hammer

[1] W. H. Holmes, Proceedings, American Association for the Advancement of Science, 1892, XLI, p. 277.

without injury to the block upon which the blow is given other than to cause spalls or pits to fly from each blow. Catlinite may, of course, be sawed, a blade of stone answering the purpose satisfactorily; but the work was, naturally, made much easier with iron tools. The thickest layer of the stone is about the middle of the vein, from which, while only 2 inches thick at most, plates of this thickness may be obtained of almost any size. In boring this stone a jasper or quartzite drill point answers quite well. A wood shaft used with dry sand is equally serviceable. If the sand used in drilling is moistened it prevents the fresh sand falling to the bottom of the drill hole to replace those crystals which have been ground into powder, while if the sand be covered with water the powdered material floats to the top until thoroughly saturated; but the binding by which the drill point is held in position would be loosened if once wet, for the wooden point of the shaft would swell from the same cause, and the worn-off material would pack and retard work by forming a crust. If the sand or even the shaft be damp the swelling of the wood and packing of the dust is equally objectionable. Any stone which may be fractured so as to have a sharp edge answers as a tool with which to scrape the pipestone into shape; the harder the stone, of course, the longer its edge would hold without resharpening. The easiest primitive process of sawing would be to use a stone blade and dry sand until iron tools came into use, though a blade of copper would answer almost equally as well. To grind a smooth surface a gritty sandstone would be used—a coarse one first and finer one later. Any water-washed stone with sand would give a surface as smooth as that of any of the ancient pipes, polishing appearing to be quite a modern treatment, and seldom seen in catlinite pipes, unless made within the last fifty years. A pebble smooths the surface according to the fineness of its texture. Wood ashes gives a good surface and a hard bone is also excellent, acting as a burnisher, for this pipe stone is susceptible of taking a high polish, though those pipes of this material of purely Indian origin are seldom if ever polished more than could be done with any ordinary water-washed pebble. The difference in time requisite to make a pipe from stone fresh from the quarry or from dry stone would, in the writer's opinion, be too insignificant to be appreciable, and the most elaborate pipe of the Siouan type, stone tools being used in working it, could scarcely have required a day to complete.

Primitive catlinite pipes, as stated, have been entirely without ornamentation, though the more recent examples are often most elaborately carved or have their surfaces inlaid with neat figures cut into the stone and filled in with sheet lead, the whole surface being subsequently rubbed to a uniform smoothness, the contrast of the gray of the lead and the Indian red of the stone producing a most pleasing effect. The color of catlinite varies from dark red to light pink, and specimens are in the U. S. National Museum collection of mottled pink and white. Where the glazed surface is encountered, as it not unfrequently is, there is usually evidence of modern manipulation. Much

of the romance of the Indian is connected with this pipe stone, supposed to have been presented to him by the Manito, and to have also sacred, valuable, and mysterious properties, its significance of peace or war all being themes fruitful of praise of this handsome stone, which certainly answers admirably for pipe material; though it is highly probable that this peculiar significance of the red and white color standing for peace or war was a modern attribute attached to the pipe because of the colors of the French and English flags. Longfellow, in the song of Hiawatha, draws a pretty picture of the quarry, of the pipe, its stem, and the material smoked:

On the Mountains of the Prairie,
On the great Red Pipe-stone Quarry,
Gitche Manito, the mighty,

* * * * *

From the red stone of the quarry
With his hand he broke a fragment,
Moulded it into a pipe-head,
Shaped and fashioned it with figures·
From the margin of the river
Took a long reed for a pipe-stem,
With its dark green leaves upon it;
Filled the pipe with bark of willow,
With the bark of the red willow;

* * * * *

Break the red stone from this quarry,
Mould and make it into Peace-Pipes,
Take the reeds that grow beside you,
Deck them with your brightest feathers,
Smoke the Calumet together,
And as brothers live henceforward!

The process of making pipes by the Sioux is thus described by Mr. Charles H. Bennett, of Pipestone City, Minnesota, as quoted by Dr. E. A. Barber: "A piece of the rock is selected from the best portion of the vein, and the Indian sculptor, with an old piece of hoop iron, or a broken knife blade which he has picked up, fashions the block roughly into the desired form. Then slowly and tediously, with the same tools, he bores out the bowl and the hole in the stem before carving the exterior, so that if in the process of boring the stem should be split no labor would be lost. After this is accomplished he shapes the surface into any design which he may have in view. This work often occupies weeks before it is completed, after which the carving is polished by rubbing it with grease or oils in the palms of the hands."[1]

Dr. Barber refers to catlinite being found at several places in Dakota, Minnesota, and Wisconsin.[2]

Catlin supposed the red steatite or pipe stone to be all traceable to

[1] E. A. Barber, Catlinite, American Naturalist, July, 1883, p. 750.
[2] Idem, p. 763.

one source, and that near the mouth of the Teton River on the upper Missouri, at that date yet unvisited except by the Indians, "given them by the Great Spirit for pipes, and forbidden to be used for anything else."

Catlin also describes the manufacture of pipes, saying: "The Indians shape out the bowls of these pipes from solid stone, which is not quite as hard as marble, with nothing but a knife. The stone, which is of a cherry-red, admits of a beautiful polish, and the Indian makes the hole in the bowl of the pipe by drilling into it a hard stick, shaped to the desired size, with a quantity of sharp sand and water kept constantly in the hole, subjecting him, therefore, to a very great labour and the necessity of much patience."[1]

He says: "The shafts or stems of these pipes are from 2 to 4 feet long, sometimes round, but most generally flat, of an inch or two in breadth, and wound half their length or more with braids of porcupine quills, and often ornamented with the beak and tufts from the woodpecker's head, with ermine skins and long red hair, dyed from white horse hair or the white buffalo's tail. The stems of these pipes are carved in many ingenious forms and in all cases they are perforated through the center, quite staggering the enlightened world to guess how the holes have been bored through them, until it is simply and briefly explained that the stems are uniformly made of the stalk of the young ash, which usually grows straight and has a small pith through the center, which is usually burned out with a hot wire, or a piece of hard wood by a much slower process."[2]

Catlin also refers to the tradition that quarries were on neutral territory, where even enemies would lay aside their arms and seek the material and smoke in peace, until finally the Sioux broke the truce.

Henry R. Schoolcraft says this stone is "fissile and easily cut or ground, by trituration with harder substances, to any figure. It bears a dull polish, which was produced by rubbing the surface with the equisitum, or rush, which has a silicious, gritty surface."[3]

Peter Kalm, early in the eighteenth century, referring to this subject, says: "The old tobacco pipes of the Indians are likewise made of clay, or pot stone, or serpentine stone. The first sort are shaped like our tobacco pipes, though much coarser and not so well made. The tube is thick and short, hardly an inch long, but sometimes as long as a finger. Their color comes nearest to that of our tobacco pipes which have been long used. Their tobacco pipes of pot stones are made of the same stone as their kettles. Some of them are pretty well made, though they had neither iron nor steel. But besides these kinds of tobacco pipes, we find another sort of pipe, which are made with great

[1] George Catlin, Letters and Notes on the Manners and Customs of the North American Indians, I, p. 234, New York, 1844.

[2] Idem, I, p. 235.

[3] Henry R. Schoolcraft, Notes on the Iroquois, p. 237, Albany, 1847.

ingenuity, of a very fine, red pot stone or a kind of serpentine marble. They are very scarce and seldom made use of by any other than the Indian sachems or elders. The fine red stone of which these pipes are made is likewise very scarce, and is found only in the country of those Indians who are called Ingouez, and who, according to Father Charlevoix, live on the other side of the river Mississippi. The Indians themselves commonly value a pipe of this kind as much as a piece of silver of the same size, and sometimes they make it still dearer. Of the same kind of stone commonly consists their pipe of peace, which the French call Calumet de Paix, and which they make use of in their treaties of peace and their alliances."[1]

There is little doubt that the red stone here referred to was catlinite.

Hunter, referring to the Kickapoo, Kansas, and Osage tribes, says: "They also make bowls and pipes of a kind of indurated bole and of compact sand and limestone, which are excavated and reduced to form by means of friction with harder substances, and the intervention of sand and water. They generally ornament them with some figure characteristic of the owner's name, as, for instance, with that of a buffalo, elk, bear, tortoise, serpent, etc., according to the circumstance or caprice that has given rise to its assumption."[2]

Barber refers to catlinite being found in Indian graves in New York, and in Georgia from a village site, points 1,200 miles from the quarry, and revealing the vast distances over which some intercommunication extended.[3]

Specimens of this stone have been supposed to be found in an Indian burial place in Santa Barbara County, California, in the shape of tubes about 5 inches long by a diameter of 1 inch,[4] though this supposition is evidently a mistaken one.

Specimens coming under the writer's notice from California of the character referred to are made from a light pink indurated clay, which is, however, mixed with sand and much softer than the catlinite, though there is similarity in the color of the two stones. The California specimens have certainly been made from a local source of supply.

William McAdams refers to a curved-base "mound pipe" of catlinite found in a mound on the Illinois River bottom 15 miles from its mouth, where at a depth of 16 feet from the surface they found a basin of clay filled with clean white sand and a beautiful pipe of mottled catlinite.[5] This implement was found associated with sea shells and objects of copper. A present is referred to as early as 1693, made by the western nations to the Iroquois, of "a calumet of red stone of extraordinary beauty and size."[6]

The Indian is by no means the only one who worked the catlinite

[1] Peter Kalm, Travels into North America, II, p. 43, London, 1771.

[2] John D. Hunter, Manners and Customs of Several Indian Tribes located West of the Mississippi, p. 298, Philadelphia, 1823.

[3] E. A. Barber, Catlinite, American Naturalist, July, 1883, p. 763.

[4] Stephen Bowers, American Naturalist, XVII, p. 990.

[5] William McAdams, Mounds of the Mississippi Bottom, Illinois, Smithsonian Report, 1882, p. 684.

[6] Documents Relating to the Colonial History of New York, X, p. 644.

into pipes, for Dr. F. V. Hayden referred to the Northwest Fur Company having manufactured nearly two thousand pipes during two years between 1865 and 1868 and traded them to the Indians on the Upper Missouri, which fact will, he thinks, throw a suspicion on Indian pipes in the future.[1]

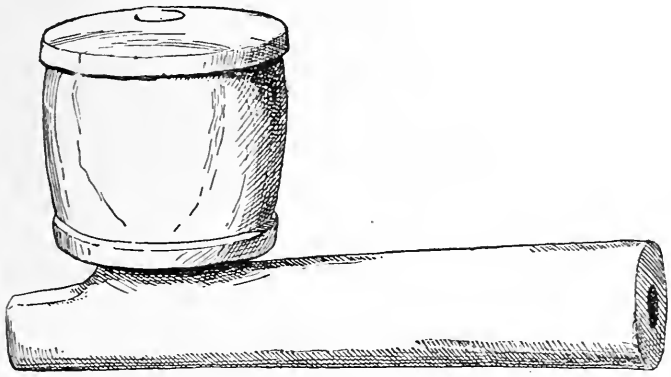

Fig. 174.
SIOUAN CATLINITE PIPE.
Cat. No. 12268, U.S.N.M. Collected by George Catlin.

From the time John Smith's people asked permission of Powhattan to pass through his country to obtain stones from which to make axes to the present time the trade with the natives has consisted largely in those things made in imitation of aboriginal implements by the whites for Indian trade. This trade was most valuable and returned enormous profits on small capital invested, and its particulars would not be made public for fear of having the field too crowded. Notwithstanding a known large production of "wampum" and of "roanoke" by the whites, references to its manufacture are unusual in the early records though it was not only an article of trade but of currency as well.

When pipes are found with figures of men or beasts carved on them it is observed that those of a given type have the figures on them all facing in a particular direction, either to or from the smoker.

Fig. 174 is one of the catlinite pipes brought from the country west of the Mississippi by Mr. George Catlin, which is $5\frac{7}{8}$ inches long with a height of $3\frac{1}{4}$ inches, being made from an unusually heavy piece of stone $2\frac{1}{4}$ inches thick, the bowl and stem holes being each three-eighths of an inch in diameter, the whole surface of the stone being highly polished. The stems of these pipes are round or square, while the projections in front of the bowls are usually square or octagonal, decreasing usually toward the end; the bowls vary in form, some being square, others cylindrical or even spheroidal, and at times are carved with some excellence and have figures upon the stems, which usually face the smoker, and where this practice is departed from there is likelihood of its being done for the benefit, if

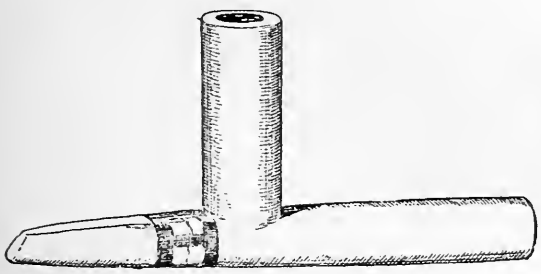

Fig. 175.
CATLINITE PIPE.
Evanston, Illinois.
Cat. No. 175916, U.S.N.M. Collected by William Porter.

[1] Proceedings American Philosophical Society, 1865–1868, X, p. 274.

not in ridicule, of travelers. With scarcely a single exception among the Siouan pipes the bowl and stem are at right angles to each other.

Fig. 175 is a red "pipe stone" 8 inches long and scarcely an inch in width, the bowl being 5 inches high. It was purchased of a dealer at Evanston, Illinois, by Mr. William Porter, and is probably of no considerable age, and not so well polished as the preceding example, as it was finished probably by means of ordinary sandpaper, a material which the modern Sioux had learned the use of. The base of this pipe is flat, the point or prow running out flat top and bottom, while the sides are convex beyond the base of the bowl, stem and bowl being cylindrical. The prolongation of the stem has been fractured and subsequently repaired in a most ingenious manner with sheet lead, to do which required a groove to be cut on each side of the fracture encircling the stem. From these grooves others were cut along the stem on both sides, into all of which lead was run or fitted and subsequently hammered down, after the broken pieces had been joined. Subsequently the lead was smoothed off level with the surface of the pipe, and the splice was complete. This repaired stem demonstrates that the modern Indian is not devoid of resources of a mechanical nature. A similar piece of work is illustrated by Mr. I. A. Lapham, from Wisconsin, of a fine-grained sandstone calumet on which plates of lead had been employed in repairing a fracture.[1]

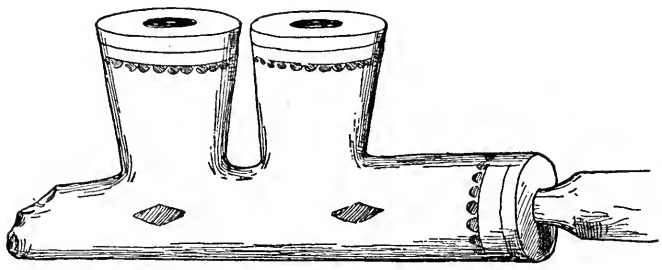

Fig. 176.

DOUBLE-BOWLED CATLINITE PIPE.

After Catlin. Smithsonian Report, 1885, Pt. 2, plate 114.

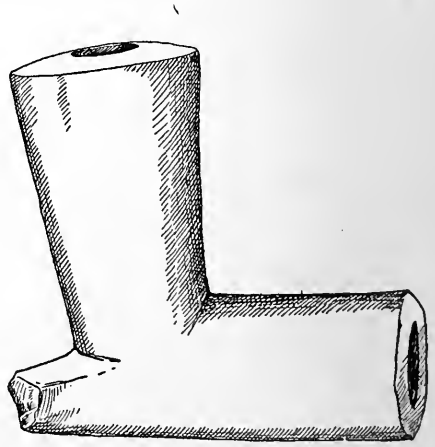

Fig. 177.

SIOUX PIPE.

Fort Buford, North Dakota.

Cat. No. 8496, U.S.N.M. Collected by James P. Kimball.

This pipe (fig. 176) is drawn after an illustration of Catlin, and shows how varied were these Siouan forms, while invariably remaining true to type, notwithstanding its double bowl rising from a single stem.[2] A similar specimen is in the Douglass collection, which was obtained in 1820 by Maj. D. B. Douglass, father of the present owner, in Minnesota, while accompanying Gen. Lewis Cass as astronomer of the expedition sent to make treaties with the Indians, the double bowl possibly being ancient. On the stem of another pipe of catlinite in

[1] Antiquities of Wisconsin, p. 83, Smithsonian Contributions to Knowledge, No. 70.

[2] Smithsonian Report, 1885, Pt. 2, plate 114.

the Douglass collection there stands a bear facing the smoker, a peculiarity of which is that the bear's eyes are made of two white beads let into the stone, and evidences apparently the survival on the specimen of a practice noticed among pipes of the mound types.

Fig. 177 is a dull red stone pipe from Fort Buford, North Dakota, collected by Mr. James P. Kimball. It is $3\frac{1}{4}$ inches long and 3 inches high, stem and bowl openings each being five-eighths of an inch in diameter, the pipe having been cut out by means of a sharp blade, the facets left by the tool remaining distinct. The base is flat, the rest of the stem being cylindrical. The prolongation of the stem is flattened beyond the base of the bowl, its end having been broken off. This pipe is evidently quite modern, as evidenced by the crust of tobacco yet remaining in the bowl, the walls of which are about half an inch thick. The type is distinctly Siouan, though the stem is shorter than are usually those of Sioux pipes. The material is an indurated clay, possibly catlinite, though of a darker color, which may be owing to the stone being saturated with oil or grease.

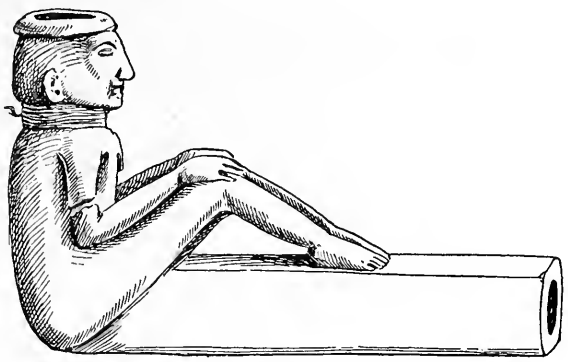

Fig. 178.
CATLINITE PIPE.
Dakota.
Cat. No. 42669, U.S.N.M. Collected by G. L. Febiger.

A highly polished catlinite pipe (fig. 178) from Dakota, collected by Gen. G. L. Febiger, United States Army, represents a man facing the smoker, the bowl being bored through the head and body. It is about $4\frac{1}{4}$ inches long with a height of $2\frac{1}{2}$ inches. Though the position of the figure is not an easy one it is carved entirely in the round with unusual artistic feeling, the legs being drawn up slightly on the stem with the hands and arms extended along the legs and knees. It is of quite modern form, and there is yet wrapped around the neck a coil of fine brass wire, which in contrast to the cherry red of the stone gives a very pleasing effect. The lobes of the ears are bored evidently for the purpose of decorating them with pendants.

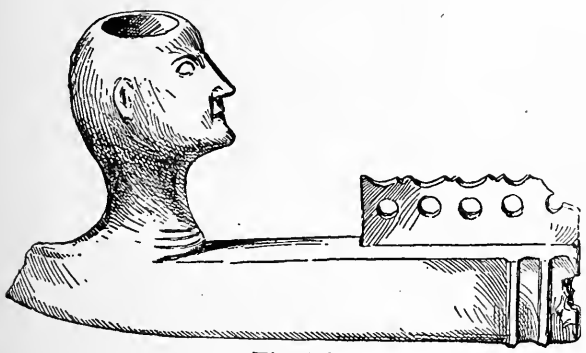

Fig. 179.
SIOUX PIPE.
Upper Missouri River.
Cat. No. 2594, U.S.N.M. Collected by U. S. War Department.

Fig. 179, deposited by the U. S. War Department, is a pipe of black serpentine, captured by the army in conflict with the Indians of the

Upper Missouri drainage, and though differing both in material and certain of the characteristics from the preceding specimen retains much of the Siouan form, though the ridges near the end of the stem are in imitation of metal forms. It is finished with unusual skill. From one end to the other it is $4\frac{3}{4}$ inches long and is about $1\frac{1}{8}$ inches wide. The bowl represents the head of a person, scarcely of Indian type, the sharp chin being markedly noticeable. The ears are bored with perforations an eighth of an inch in diameter, extending into the ear drums. The wing or elevation on the stem is scarcely an eighth of an inch thick and has been perforated by a row of five holes. The opening of the stem is but one-fourth of an inch in diameter, whereas that of the bowl is five-eighths of an inch, which is quite unusual in pipes of the Siouan type. There has been broken from the back of the head a knob intended apparently to represent a knot of hair somewhat on the order of the famous Indian head found by Squire and Davis. It is noticeable how markedly pronounced are the stone pipes having holes laterally bored in their stems, characteristic of those areas where snow lies longest, it being especially a feature of pipes found from the Atlantic to the Pacific north of the Great Lakes.

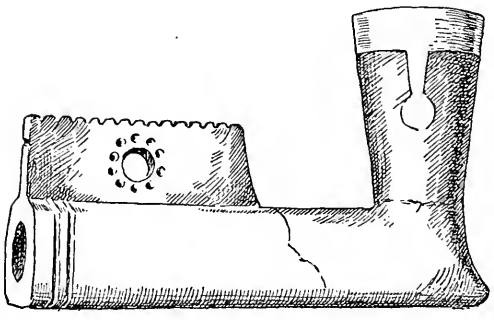

Fig. 180.

LEAD AND STONE SIOUAN PIPE.

Cat. No. 2349, U.S.N.M. Collected by U. S. War Department.

Another of the War Department specimens (fig. 180) captured from the Indians of the drainage of the upper waters of the Missouri retains the type form of the Sioux, the prolongation of the stem being less pronounced than usual. It is made from a black stone of medium hardness, possibly a chlorite, and is about the same dimensions as the last pipe except that the stem opening is much larger in proportion than in the last one, being half an inch, while the bowl is three-fourths of an inch in diameter. An alate, perforated wing extends along the base as in the last specimen; this wing is perforated from side to side for the purpose of attaching a cord; from the perforation along one side of this wing there extends a wavy line incised with such care as to impress the observer that it has some special significance. About one-half inch of the top of the bowl is composed of lead, which is held in position by three plates having discoidal ends which are inlaid on the stone at equal distances around the bowl.

Fig. 181 is a pipe of this type from the Upper Missouri, collected by the U. S. War Department. It is $4\frac{1}{2}$ inches long and made of metal, apparently lead. In order to protect the lead from the heat of the burning tobacco a lining of sheet copper has been inserted in the bowl, and laps over the top, the bowl in its exterior shape being round, whereas the stem is square. Though there are upon this pipe no discernible

mold marks, the lead part has probably been made for the Indian trade by the whites.

Pipes of the Siouan form appear to be distributed over a wider area than almost any other type, owing in a measure to the attractiveness of the usual red color of the catlinite, which must have been used by the natives for pipes from their earliest acquaintance with it, though others of the Siouan stock appear to have also used stones of their country, such as chlorite and green and gray steatites, as well as black chlorite, and later the white traders have introduced pipes of the same character made of metal, which the Indians have eventually used by inlaying in combination with the various pipe minerals.

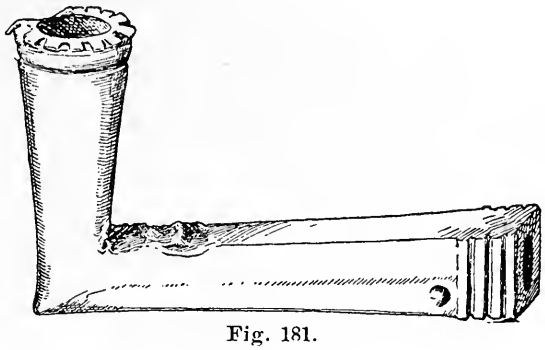

Fig. 181.
METAL PIPE.
Upper Missouri.
Cat. No. 2340, U.S.N.M. Collected by U.S. War Department.

The wide distribution of the Siouan rectangular pipe is probably owing to Indians using this type having adopted the smoking habit from the Sioux, who have long traded in catlinite.

The long prow of the typical Siouan pipe appears to give way on the northern and western borders of their territory to a rectangular-stemmed pipe, often having a ring around its stem in relief, and a shortened prow, as is observed among the Ojibways, who are of Algonquin stock. This form, however, appears more modern, and suggests ownership by another people. Hind refers to different tribes affecting different pipe shapes.[1]

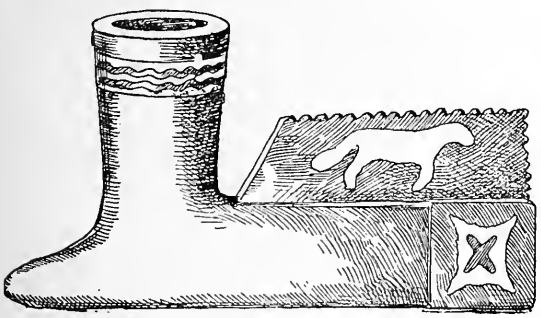

Fig. 182.
INLAID SIOUX PIPE.
Dakota.
Cat. No. 73072, U.S.N.M. Collected by D. B. Wilson.

To the southwest of the Sioux the prow of the pipe is again encountered, though the stem is shorter. With few other pipes is there so strict regard had to characteristics of type and, at the same time, greater latitude allowed for ornamentation of the exterior. In this type the bowl is approximately as deep as the stem is long; the stem or prow may vary in length, and at times an alate projection rises almost like an inverted keel from the top of the stem and extending one-half or two thirds the way from the mouthpiece to the bowl. This wing is usually devoid of ornamentation; at other times, however, its upper edge may be notched, or a greater or less number of holes may be bored

[1] Henry Youle Hind, A Narrative of the Canadian Red River Exploring Expedition of 1857, II, p. 139, London, 1860.

through the keel, or the ornamentation may be of the character of fig. 182, which is a black chlorite, with an inlaying of lead in bands around the upper part of the bowl, made by the Wahpeton Sioux, Dakota, collected by Lieut. D. B. Wilson, United States Army. There is a crude effort at ornamentation by means of a lead plate inlaying of a figure apparently intended to represent a horse. On the stem base there is an inlaid plate of lead of about an inch in diameter let into the stone, into which in turn is inserted a red stone cross, both polished smoothly with the surrounding surface. This pipe was the property of a medicine man of the Wahpeton Sioux, and retains all of the Siouan characteristics, though it is evidently of recent origin.

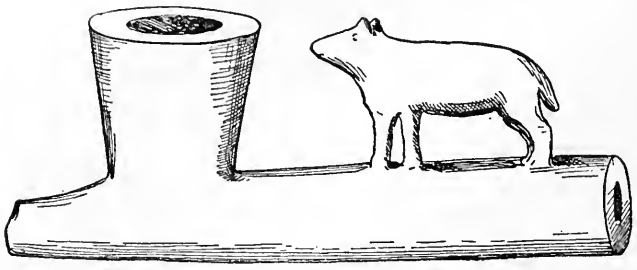

Fig. 183.

SIOUX CATLINITE PIPE.

After George Catlin. Smithsonian Report, 1885, Pt. 2, plate 34.

Fig. 183 is a typical Siouan catlinite pipe drawn after Catlin's illustrations. It is to be doubted, however, whether the animal standing on the stem is intended to represent a pig or a bear. From our acquaintance with totemic customs, however, it may be suspected that the bear was intended. This pipe was the property of a Missouri chief, Haw-che-ke-sug-ga, and, if correctly drawn, is an unusual occurrence, for the animal faces from the smoker, a posture rarely allowed in Sioux pipe figures, and as the animal facing from the smoker is unique, it may be questioned whether Catlin may not have reversed the animal without due consideration.

Fig. 184.

SIOUX PIPE.

Sioux, Dakota.

Cat. No. 43278, U.S.N.M.

Collected by James E. Sebring.

Prof. G. H. Perkins refers to a red pipe-stone specimen presenting some peculiarities from the Champlain Valley, near Burlington, Vermont, which was plowed up on the surface. The bottom is furnished with a regular keel and ornamented with a number of holes made from side to side.[1] The keel-like ornamentation appears to be in some way derived from that so commonly found on the bases of Micmac pipes.

A similar keel has been noted on a metal tomahawk pipe found as far south and east as Chester County, in Pennsylvania, which was made from German silver, evidently copied from Siouan characteristics.

A Catlinite pipe, 6½ inches long, from Sioux, Dakota, collected by

[1] The Calumet in the Champlain Valley, Popular Science Monthly, December, 1893, p. 344, fig. 10.

Mr. James E. Sebring (fig. 184), is, from an artistic point of view, one of the most ornate pipes of Indian origin which the writer has ever seen. The art concept here evidenced is one of the most ancient known, though the shape of this pipe, as the pipe itself, is known to be quite modern. The bowl, in the form of an acorn, is held in the distended jaws of the panther, the eyes, teeth, and ears of which are well carved, the projection extending from the back of the head being intended evidently to afford something to hold the pipe by when smoking it, being akin to the spear on tomahawk pipes, or possibly to projections common to pipes in New Mexico. The opening of the bowl of this pipe is seven-eighths of an inch in diameter, while that of the stem at its end is scarcely one-eighth of an inch. It is singular that a Sioux Indian should have selected so elegant, and at the same time so antique, a style, for in the sculptures of Phœnicia the human head is held in the lion's mouth, the last vestiges of which may yet be encountered in the lion skin over the shoulders of the Greek figures of Hercules; in Babylonia the human face is held in the distorted jaws of a fish, while coming nearer home, to Central and South America, the same principle is embodied in sculptured figures represented as covered with human or beasts' skins or held in their distended jaws, as the panther here holds the acorn. The stem being curved and the Indian finding it impossible to bore a curved hole in stone of uniform hardness has first excavated the bowl, into which he has bored a hole from the base of the stem; from the same hole he has bored in the opposite direction toward the mouthpiece; then from the mouthpiece a hole has been drilled intersecting the latter hole. All that was then necessary to make a continuous tube to the bowl was to plug the hole in the base of the stem, and this was accomplished by neatly inserting a plate over this hole, the lead being rubbed to an even surface with the rest of the stone.

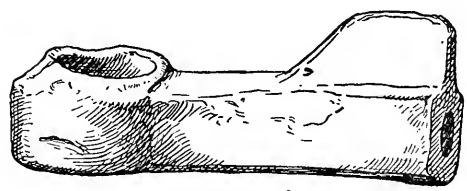

Fig. 185.

STEATITE PIPE.

Mineral County, West Virginia.

Cat. No. 11527, U.S.N.M. Collected by J. A. Davis.

Fig. 185, from West Virginia, collected by Rev. J. A. Davis, represents a much-worn, broken-bowled, small, well-polished, green pipe of the Siouan type, only 2 inches long, with a width scarcely more than half an inch. The wing on the stem would stamp its type, though the locality where found would indicate that it was far from where it was originally made.

Prof. F. W. Putnam, referring to certain burials in cairns in Kansas, considers them more recent than mounds, and instances a number of diminutive catlinite pipes found in these stone piles associated with a glass bead.[1]

From a careful examination of available data the writer can but con-

[1] F. W. Putnam, Report of the Peabody Museum of American Archaeology, II, p. 718.

clude that the typical catlinite pipe was rectangular at the time of the first contact of the French with the Sioux, and that all pipes of this material differing in form are comparatively modern, and, as a matter of course, articles of European manufacture found in burials are of the historic period, as are those catlinites upon which animals are carved.

PIPES OF THE NORTHWEST COAST.

All along the western and northwestern coast of America a most curious style of pipe is found, commonly of very grotesque form and made of a great variety of material, such as wood, stone, antler, and of these materials in combination with metal, bone, and mother-of-pearl. North of California almost all the pipes found not only indicate quite modern origin but, in a measure, are suggestive of being made for sale to the whites, though it can not be questioned that the Haida are remarkable as carvers of great originality and have been known as such from a very early period, their art being of a grotesque originality, rude, it is true, but unique.

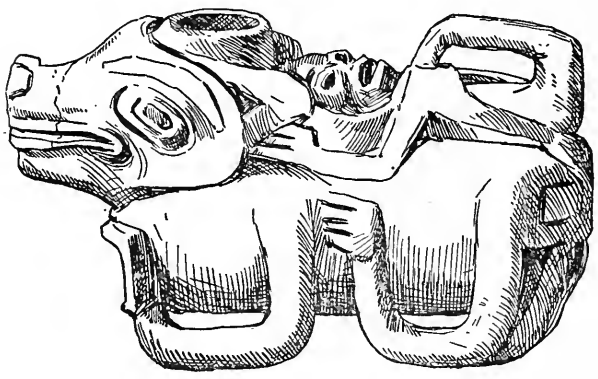

Fig. 186.
NORTHWEST COAST PIPE OF STEATITE.
American River, California.
Cat. No. 6201, U.S.N.M. Collected by E. Jewett.

Fig. 186 is a dark gray pipe of steatite, $4\frac{1}{2}$ inches long, $2\frac{7}{8}$ inches high, and $1\frac{1}{2}$ inches wide, from American River, California, collected by Col. E. Jewett, and does not appear to have been much smoked, for had it been it would have been greased to give it a black color. In this pipe the bowl opening is five-eighths of an inch, while that of the stem is three-eighths of an inch in diameter, though there is less constancy in the size of the California pipes than in most others. This specimen is a curious combination of man and beast, quite typical of California Indian art. The main figure is that of some crouching four-footed animal, resembling none with which we are acquainted, though probably readily recognizable by persons familiar with their system of symbolism. Its four feet are curled under the body; a long tail, forming a loop over the back, would suggest that a mountain lion were intended. Carved into the back of this beast, face up, is the diminutive figure of a human being, who lies upon his back. The large eyes and prominent muzzle of the creature represent a grotesque character of work, akin, apparently, to certain rude South American carvings, and in some respects having characteristics encountered at times in ivory carvings from Japan or China, though there is sufficient individuality to entitle it to a place of its own. This pipe is quite massive and has been carved by means of sharp tools of iron, though the work could be done with a sharp-bladed shell or stone.

Fig. 187 from Puget Sound, collected by Lieut. Charles Wilkes, United States Navy, is a combination pipe of wood, bone, and tin, and shows what variety there is at times in modern Indian art. It is a pipe apparently originating on the Pacific coast, intended chiefly to attract travelers. It is 18 inches long and 4 inches high, representing, one might almost say, a farm, houses, and garden. The chimney of the house is composed of a tin cylinder, and at times a brass or copper cartridge is made to answer the same purpose by perforating the side of the shell to allow the smoke to escape into the stem. The sides of the house and part of the balance of the ornamentation consist of bone in thin plates fastened to the wood of which the bulk of this pipe is made. The carving is decidedly characteristic of the locality from which it comes, though the houses, gate, and trees indicate clearly how modern they are. In the prow of a boat-shaped pipe in the U. S. National Museum collection from Puget Sound a disk-like depression has been cut, into which a plate of mica is neatly fitted, and on another a crowing rooster is figured. The inlaying of many of these pipes has been made more

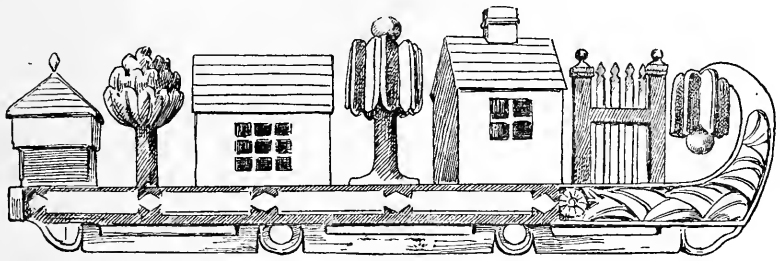

Fig. 187.

PUGET SOUND PIPE.

Puget Sound.

Cat. No. 2604, U.S.N.M. Collected by Charles Wilkes.

effective by using the nacre of the abalone shell, which, with its brilliant green coloring, is most pleasing, especially when used for the eyes of the monsters they adorn. These people carve at times most picturesque and ludicrous figures from deer horns, sawed off at the point where the horn enters the skull, taking every advantage of the shape of the horn to add to the artistic effect of the pipes, and though the totem posts have been so long known, with their quaint, rude figures, one can but wonder to what extent the carving of these people has been influenced by the Japanese, who have long been on the upper coast.

Pipes made by the natives of Queen Charlotte Island and the shores of British Columbia and the Tshimpshian tribes north of Vancouver Island are usually composed of a black slate, representing various animals, man included, and figures in singular postures are most attractive, though modern, and carved with steel tools, with a fidelity sufficiently accurate to enable one to recognize the animals intended, though these pipes of slate appear to represent a manufacture which chiefly aims to attract the tourist and curiosity seeker.

Pipe bowls of the Chinook Indians, according to Bancroft, were made

of wood fitted to elder stems, but the best ones, of stone, elegantly carved, were of Haida manufacture and are obtained from the north.[1]

While there is good reason to doubt if the American Indian on any part of the continent ever knew of the use of the bow or pump drill before the advent of Europeans there is much evidence that throughout the continent fire to light the pipe was made by twirling one stick upon another, and in the Southwest there is evidence that fire was made by plowing or rubbing one stick back and forth in the groove of another.

Hind says of the pipes of the Babeen Indians, "While they exhibit a much higher degree of art than we should expect to find among such a savage race, they are illustrations of their imitative power and ingenious workmanship. The grotesque devices with which their pipes are ornamented can generally be traced to objects which they have seen since they became familiar with the white traders belonging to the Hudson Bay Company on the Northwest Coast."[2]

Gilbert Malcolm Sproat says: "The Aht Indians are fond of tobacco, but they have no medicine pipe, nor do I think they have among them the marked superstitious pipe usuages by which most of the North American Indian tribes are distinguished. They formly had plain cedar pipes (rosh-kuts) devoid of ornament, but there were also to be found in all the tribes the ornamental bluestone (Tshimpean) pipe which had been obtained in traffic with the Northern Indians. The present Aht name for tobacco (Quish-shah) is their word for smoke. Tobacco has been so long known to the natives that they can hardly explain what material they smoked before they had it, but they probably in former times made use solely of the leaves of the small shrub which is to this day mixed with tobacco in their pipes for the purpose of diminishing the intoxicating effect. It is customary after meals to pass the pipe around among the guests."[3]

That smoking tobacco is a modern practice with certain tribes there can be little doubt, and is indicated in the account of Lewis and Clarke, who said of the natives on one part of the Columbia River: "During these preparations he smoked with those about him who would accept tobacco, but very few were desirous of smoking, a custom which is not general among them, and chiefly used as a matter of form in great ceremonies."[4]

These people probably smoked other plants than tobacco, though to what extent it is difficult to say. According to George Gibbs, the Tinneh or Chippewayan Indians of British and Russian America between the Mackenzie and Peel rivers and the Yukon and banks of the Porcupine, about the sixty-eighth degree of latitude, make "no intoxicating drinks whatever, but are passionately fond of tobacco. This taste they of course learned of the whites. Most of the Kutchins

[1] H. H. Bancroft, Native Races of the Pacific States, I, p. 237, San Francisco, 1874.

[2] Henry Youle Hind, A Narrative of the Canadian Red River Exploring Expedition of 1857, II, p. 140, London, 1860.

[3] Scenes and Studies of Savage Life, p. 269, London, 1868.

[4] Lewis and Clarke's Expedition to the Rocky Mountains, II, p. 15, Philadelphia, 1814. See also J. H. McCulloh, Researches, p. 91, Baltimore, 1829.

smoke in the same manner that we do, but some of the tribes use the same pipes as the Eskimo and swallow the smoke. This kind of a pipe has a wooden stem 12 inches long slightly curved upward; the bowl is well represented by half of a reel for winding sewing cotton upon, and the hole in the pipe is about the same as that in the spool."

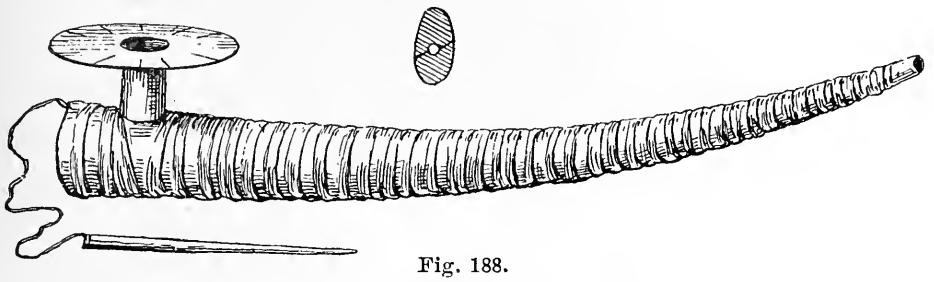

Fig. 188.

ESKIMO PIPE.

After George Gibbs. Smithsonian Report, 1866, p. 324.

The pipe is of the shape shown in fig. 188. "The bowl is made of metal. They do not smoke pure tobacco in it, but mix it with the scrapings of willow."[1]

The curves of pipes of this type vary greatly, depending in a great measure upon the locality where found, the bowls at times being of stone and the sizes of the stems increase as the Siberian coast is approached. Examples in the U. S. National Museum may be seen with less curve than has the one here illustrated, or with even more curve than fig. 189, which is an Eskimo pipe collected at Nome Island, Alaska, by Prof. I. C. Russell. It is of wood, its length being 7½ inches, or sitting up, about 7 inches, and, as with all pipes of extreme Northwestern America, the stems are so constructed as best to allow the owner to collect the nicotine or juices of the plant smoked. This pipe, while not so heavy and thick in the stem as many from the Russian possessions, resembles the latter greatly and is presumably copied from the Russian type.

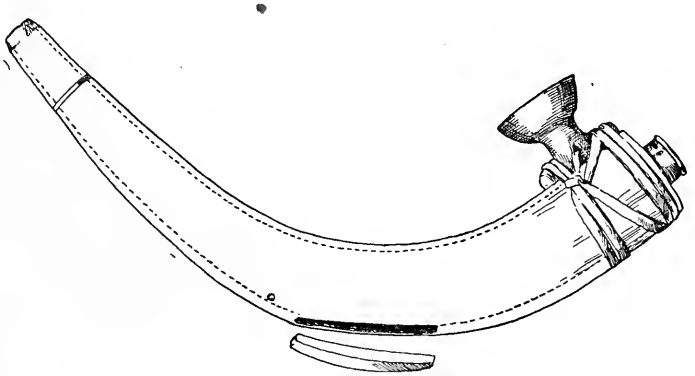

Fig. 189.

RUSSIAN TYPE OF ESKIMO PIPE.

Nome Island, Alaska.

Cat. No. 153437, U.S.N.M. Collected by I. C. Russell.

The bottom of the stem has a small opening like a trapdoor, which can be closed at pleasure while in general use. The stem is loosely packed with some absorbent. This in turn is taken out by opening the plate or trapdoor and either smoked or eaten, a practice customary with the Eskimo. These stems are made of wood scraped to a thickness of from

[1] Smithsonian Report, 1866, p. 324.

one-sixteenth to one eighth of an inch, the mouthpiece usually consisting of a hollow bone plug, the opposite end being often stopped with a copper pistol cartridge. The bowl consists of a compact green serpentine, its opening being scarcely more than one-fourth of an inch in diameter, its base being so shaped as to fit the stem closely and is held in position by a strap of sealskin; at other times they are fitted into shoulders. This arrangement enables the smoker to take his pipe apart and lose none of the contents of bowl or stem, which is considered of great value.

This type of pipe appears closely allied to the Japanese pipes, the most ancient of which, according to the Marquis of Nadaillac, date of the seventeenth century.[1] They appear to have been introduced either by way of Siberia or the Kurile and Aleutian islands, which would indicate that the use of tobacco had practically circumnavigated a large part of the globe, and been returned to America from Asia. Whether the first knowledge of tobacco which the Europeans had came from Spanish, French, or English sources, there is no doubt that its use quickly spread from the eastern side of the American continent, and the plant was thence distributed as a plant possessing valuable medicinal properties to the most distant parts of Europe, then to Asia, and thus again to the American continent, entering by the west. The shapes of pipes would be governed, presumably, largely by local surroundings and supply, and also to some extent by individual taste. Tobacco after its introduction into Europe rapidly came into general use. In 1774 P. Le Roy describes the experiences of four Russian sailors who were left on shore on the island of East Spitzbergen, who "carried a tinder box and tinder, a bladder filled with tobacco, and every man his wooden pipe."[2] All Russian sailors at this time were said to be expert carpenters.

Captains Cook, Clerke, and Gore, in their expedition to the Pacific in 1776 to 1780 on the North American Coast, refer to the natives being in possession of iron between latitude 61° 30″ north and 53° 35″ north. At Unalaska, in 53° 35″ north, on the Alaskan peninsula, Cook refers to the natives trading some fishing implements for tobacco,[3] and says there are few that do not both smoke and chew tobacco and take snuff.[4]

The natives about latitude 59° 37′ 30″ and longitude 197° 45′ 48″, Cook says, "seemed perfectly unacquainted with any civilized nation; they were ignorant of the use of tobacco; nor did we observe in their possession any foreign articles, unless a knife may be considered as such."[5]

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[1] Les Pipes et le Tabac; Matériaux pour l'Histoire Primitive et Naturelle de l'Homme, November, 1882, p. 499, note.

[2] P. Le Roy, A Narrative of the singular Adventures of four Russian Sailors, from the German, p. 52, London, 1774.

[3] Voyage to the Pacific Ocean, p. 357, note 2, London, 1784.

[4] Idem, p. 109.

[5] Idem, III, p. 16.

Cook speaks of the natives of the Alaskan Coast being acute traders, even requiring pay for grass and endeavoring to get pay for water. He speaks also of the carvings of their canoes.

G. H. Von Lingsdorf refers to the Aleutian Islanders in the first decade of this century as not being "addicted to smoking, but are passionately fond of snuff. They will work a whole day at the hardest labor to get a single leaf of tobacco as their wages, and when obtained they prepare it for use by grinding it to powder in a mortar made of the bones of whales, mixing it with ashes and water."[1]

The Kutchin and eastern Tinneh, we are informed by Mr. W. H. Dall, use a pipe modeled after the clay pipes of the Hudson Bay Company, but he says "they also carve very pretty ones out of birch knots and the roots of the wild rosebush."[2]

The writer is informed by Capt. E. P. Herendeen, who has spent many years in northern Alaska, that the natives use willow twigs, which have been cut crosswise, for smoking purposes. The Siberian natives use the willow root for dyeing, but the remainder of the root is used for smoking.

At Point Barrow, in 1837, we are told "the grand article in demand here was tobacco, which, as in Dease Inlet, they call tawac or tawacah, a name acquired, of course, from the Russian traders. Not content with chewing and smoking it, they swallowed the smoke until they became sick, and seemed to revel in a momentary intoxication. Beads, rings, buttons, fire steels, everything we had, were regarded as inferior to tobacco, a single inch of which was an acceptable equivalent for the most valuable article they possessed."[3]

Sir Edward Belcher says of the Point Barrow Eskimo in 1825–1829: "They had long had the habit of smoking, but used the stem and down of a peculiar grass steeped in some aromatic gum, probably derived from a fir. They did not use tobacco until we introduced it."[4]

John Murdoch, who was a member of the International Polar Expedition to Point Barrow, Alaska, 1881–1883, has very fully discussed the smoking habit of these natives. Among other things relating thereto, he says: "The only narcotic in use among these people is tobacco, which they obtain directly or indirectly from the whites, and which has been in use among them from the earliest time when we have any knowledge of them. When Mr. Elson, in the *Blossom's* barge, visited Point Barrow in 1826, he found tobacco in general use and the most marketable article. This undoubtedly came from the Russians by way of Siberia and Bering Strait, as Kotzebue found the natives of

[1] Voyages and Travels, Pt. 2, p. 48, London, 1813.

[2] Alaska and its Resources, p. 81, Boston, 1870.

[3] Thomas Simpson, Narrative of the Discoveries on the North Coast of America, effected by the officers of the Hudson Bay during the years 1836–1839, p. 156, London, 1843.

[4] Works of Art by the Esquimaux, p. 133, Icy Cape and to the North, 1825–1829, Transactions Ethnological Society, London.

the sound which bears his name, who were in communication with the Asiatic coast by way of the Diomedes, already addicted to the use of tobacco in 1816. It is not probable that tobacco was introduced on the Arctic coast by way of the Russian settlements in Alaska. There were no Russian posts north of Bristol Bay until 1833, when St. Michael's redoubt was built. When Captain Cook visited Bristol Bay, in 1778, he found that tobacco was not used there, while in Norton Sound the same year 'the natives had no dislike to tobacco.'"

Neither was it introduced from the English posts in the east, as Franklin found the Kûñmûdlĭñ not in the habit of using it. "The western Esquimaux use tobacco, and some of our visitors had smoked it, but thought the flavor very disagreeable." Nor had they adopted the habit in 1837. When the *Plover* wintered at Point Barrow, according to Dr. Simpson's account, all the tobacco, except a little obtained from the English discovery ships, came from Asia, and was brought by the Nunatañmiun. At present the latter bring very little, if any, tobacco, and the supply is obtained directly from the ships, though a little occasionally finds its way up the coast from the southwest. They use all kinds of tobacco, but readily distinguish and desire

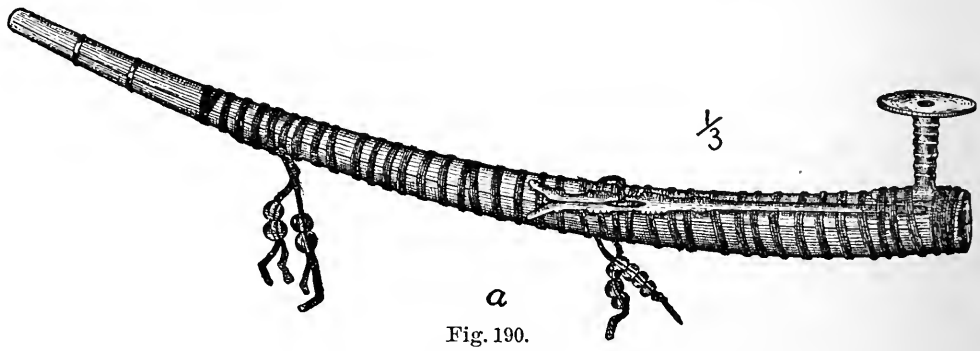

Fig. 190.

ESKIMO PIPE

After John Murdoch. Ninth Annual Report of the Bureau of Ethnology, p. 67.

the sorts considered best by the whites. For instance, they were eager to get the excellent quality of "navy" tobacco furnished by the commissary department, while one of our party who had a large quantity of exceedingly bad fine-cut tobacco could hardly give it away. * * * The habit of chewing tobacco is almost universal. Men, women, and even children, though the latter be but 2 or 3 years old and unweaned, when tobacco is to be obtained, keep a "chew," often of enormous size, constantly in the mouth. The juice is not spit out, but swallowed with the saliva, without producing any signs of nausea. The tobacco is chewed by itself and not sweetened with sugar, as was observed by Hooper and Nordenskiold among the Chuckches.[1]

Fig. 190, from Utkiawĭn, Alaska, collected by Mr. John Murdoch, has an iron bowl, noticeable for the ornamentation of the shank. This has evidently been heated and shrunk on. The wooden stems of these pipes appear to be willow or birch and are in two longitudinal sections, held

[1] The Point Barrow Expedition, Ninth Annual Rept. Bureau of Ethnology, p. 65.

together by the lashing of seal-skin thong which serves to attach the bowl to the stem. This lashing was evidently put on wet and allowed to shrink, and the ends are secured by tucking under the turns. The whipping at the mouthpiece is of fine sinew thread. A picker of steel for cleaning out the bowl is attached to the stem by a piece of seal thong, the end of which is turned under the lashing.

Fig. 191, from Utkiawin, Alaska, also collected by Mr. John Murdoch, has a bowl of rather soft greenish-gray slate. The stones are always of the same material and put together in the same way, but are some-

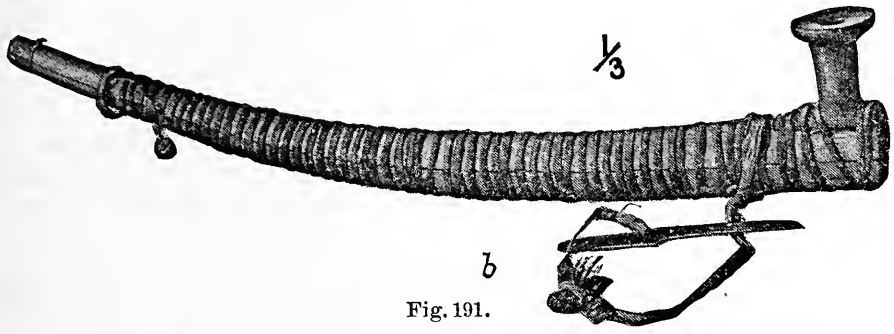

Fig. 191.

ESKIMO PIPE.

After John Murdoch. Ninth Annual Report of the Bureau of Ethnology, p. 67.

times lozenge shaped instead of elliptical in section. The lashing is sometimes of three-ply sinew braid. The bowl shows the greatest variation both in form and material.

Fig. 192 is a bowl of walrus ivory lined with copper from Utkiawin, Alaska, collected by Mr. John Murdoch. "Antler and stone pipes of this pattern and rather small are usually carried by the men out of doors, while the more elaborate metal pipes, which are often very large and handsome (I have seen some with a saucer 3 inches in diameter) are

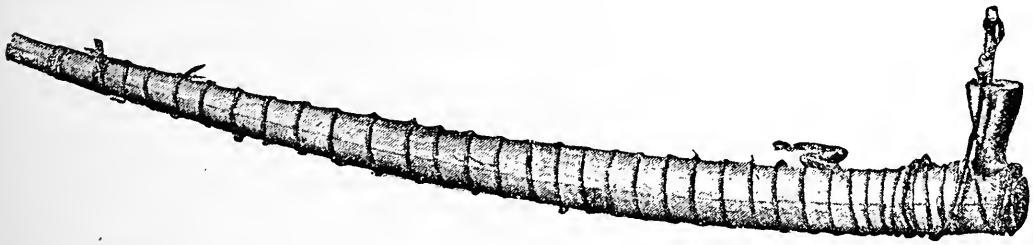

Fig. 192.

ALASKAN PIPE.

Utklawin, Alaska.

Cat. No. 89285, U.S.N.M. Collected by John Murdoch.

more frequently used in the house and by the women. The stem is usually a foot to 13 inches long, though pipes at least 18 inches long were seen. To most pipes are attached pickers, as in the type specimen. The picker is in all cases of metal, usually iron or steel, but sometimes of copper. When not in use the point is tucked under the lashing under the stem. The pipes are readily taken apart for cleaning."

Fig. 193, collected by Mr. John Murdoch, at Utkiawin, Alaska, is a unique specimen and of the most primitive character.

It is simply a rough willow stick, slightly whittled into shape, split and hollowed out like a pipe stem. It is held together by a whipping of sinew thread, and a lashing of deerskin fastened by a slipknot at one end, the other being tucked in, as usual. A small funnel-shaped hole at one end serves for a bowl, and shows by its charred surface that it has actually been used. This pipe was bought from one of the Nunatañmiun, who were in camp at Pernyû in 1883, and shows its inland origin in the use of the deerskin thong. A coast native would have used seal thong. The pipe is carried at the girdle either with the stem thrust inside the breeches or in a bag attached to the belt. It is a long, narrow cylindric bag, made of four white ermine skins, with two hind legs and two tails forming a fringe round the bottom which is of dressed deerskin, in one piece, flesh side out. Tobacco is carried in a small pouch attached to the girdle, and tucked inside the breeches, or sometimes worn under the jacket, slung round the neck by a string or the necklace. * * * Tobacco as prepared for smoking by the Eskimo consists of common black cavendish or "Navy" tobacco, cut up very fine and mixed with finely chopped wood in the proportion of about two parts of tobacco to one of wood. We were informed that willow twigs were used for this purpose. The method of smoking is as follows: After cleaning out the bowl with the picker a little wad of deer hair, plucked from the clothes in some inconspicuous place, generally the front skirt of the inner jacket is rammed down to the bottom of the bowl. This is to prevent the fine tobacco

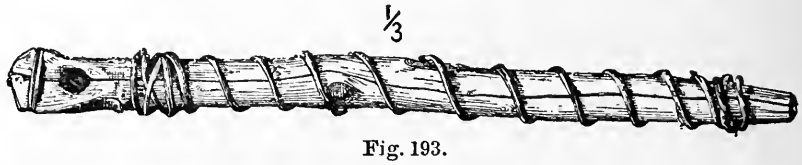

Fig. 193.

ESKIMO PIPE OF WILLOW.

After John Murdoch. Ninth Annual Report of the Bureau of Ethnology, p. 68, fig. 7.

getting into the stem and clogging it. The bowl is then filled with tobacco, of which it holds only a small quantity. The mouthpiece is placed between the lips, the tobacco ignited and all smoked out in two or three long inhalations. The smoke is very deeply inhaled and allowed to pass out slowly from the mouth and nostrils, bringing tears to the eyes, often producing giddiness, and almost always a violent fit of coughing. I have seen a man almost prostrated from a single pipe full. This method of smoking has been in vogue from the time of our first acquaintance with these people. Though they smoke little at a time they smoke frequently when tobacco is plentiful. The use of the Kui'nyu, which name appears to be applied to the native pipes, seems to be confined to the adults. We knew of no children owning them, though their parents made no objection to their chewing tobacco or owning or using clay or wooden pipes, which they obtained from us. They carry their fondness for tobacco so far that they will even eat the oily refuse from the bottom of the bowl, the smallest portion of which would produce nausea in a white man. This habit has been observed at Plover Bay, Siberia. Tobacco ashes are also eaten, probably for the sake of the potash they contain, as one of the men at Utkiawin was fond of carbonate of soda, which he told the doctor was just like what he got from his pipe. Pipes of this type differing in details, but all agree in having very small bowls, frequently of metal, and some contrivance for opening the stem, are used by the Eskimos from at least as far south as the Yukon Delta (as shown by the collections in the National Museum) to the Anderson River and Cape Bathurst, and have even been adopted by the Indians of the Yukon, who learned the use of tobacco from the Eskimos. They are undoubtedly of Siberian origin, as will be seen by comparing the figure of a Chukch pipe in Nordenskiölds Vega, and the figure of

a Tunguse pipe in Seebohm's Siberia in Asia, with the pipes figured from our collection. Moreover, the method of smoking is precisely that practiced in Siberia, even to the proportion of wood mixed with tobacco. The consideration of the question whence the Siberians acquired this peculiar method of smoking would lead me beyond the bounds of the present work, but I can not leave the subject of pipes without calling attention to the fact that Nordenskiöld has alluded to the resemblance of these to the Japanese pipes. A gentleman who has spent many years in China also informs me that the Chinese pipes are of a very similar type and smoked in much the same way.

At Kolymsk in 1820, according to Ferdinand Wrangell, the tobacco was mixed by the Russians with finely powdered larch wood to make it go farther.[1]

Sir William Edward Parry, while in the *Fury* and *Hecla*, 1821–1823, collected upward of five hundred words, but the list contains no word either for pipe or tobacco.[2]

This would indicate beyond doubt that the language contained none such and that the smoking habit was comparatively new to them, which certainly appears the accepted belief.

Murdoch says: "We have indeed positive proof that the people of the Mackenzie region acquired the habit of smoking from their western neighbors."[3]

Of their present habit, however, he says: "All the Eskimo, with the exception of the so-called Arctic Highlanders, of Smith Sound, and perhaps some of the more remote tribes of the central region, are passionately addicted to the use of tobacco. East of Cape Bathurst it is perfectly well known that the taste was acquired directly from the Europeans, Danes and English, who have made more or less permanent settlement in these regions. On the other hand, the first explorers who visited the Eskimo on the northwest coast of America found tobacco already in use among them."[4]

Capt. F. W. Beechy says of the natives of Kotzebue Sound in 1825–1828: "We were joined by three Caiacs from some tents near us and four from the river who were very troublesome, pestering us for tawack, and receiving the little we had to give in the most ungracious manner without offering any return."[5]

Mr. James G. Swan says of the natives of Cape Flattery: "After eating they sometimes, but not always, indulge in a whiff of tobacco, but smoking is not a universal practice among them. * * * Smoking is practiced even less than among some of the tribes east of the Rocky Mountains, and there are no ceremonials connected with its use. Occasionally an Indian will swallow a quantity of smoke, which, being

[1] Narrative of an Expedition to the Polar Sea, 1820–1823, London, 1840.

[2] Journal of a Second Voyage for the Discovery of a Northwest Passage, 1821–1823, London, 1824.

[3] John Murdoch, On the Siberian Origin of Some Customs of the Western Eskimo, American Anthropologist, I, p. 330.

[4] Idem, p. 330.

[5] Narrative of a Voyage to Pacific and Bering Strait, p. 322, London, 1831.

retained a few seconds in the lungs or stomach, produces a species of stupefaction lasting from five to ten minutes and then passing off. The calumet or pipe of peace is quite unknown among these Indians."[1]

Mr. W. H. Dall refers to the Kutchin Indians of Alaska, who "make pretty pipe stems out of goose quills, wound about with colored porcupine quills."[2]

In the territory contiguous to the Yukon, Dall says "we would stop every few minutes to let the Indians smoke. The operation takes less than a minute. Their pipes are so constructed as to hold but a very small pinch of tobacco. A pinch of tobacco cut as fine as snuff is inserted and two or three whiffs are afforded by it. The smoke is inhaled into the lungs, producing a momentary stupefaction, and the operation is over."[3] The bowls of the Yukon pipes are generally cast from lead. Sometimes they are made of soft bone or even hard wood. In smoking a few reindeer hairs pulled from his parka are rolled into a little ball and placed in the bottom of the bowl to prevent the contents being drawn into the stem.

The Indian pipe Dall considers a copy of the Eskimo pipe, as the latter were the first to obtain and use tobacco. Many of the tribes call it by the Eskimo name. A fungus which grows on decayed birch trees, or tinder manufactured from the down of the poplar rubbed up with charcoal, is used with flint and steel for obtaining a light. The Chuckchees, Mr. Dall says, "use a pipe similar to those of the Eskimo, but with a much larger and shorter stem. This stem is hollow and filled with fine birch shavings. After smoking for some months these shavings, impregnated with the oil of tobacco, are taken out through an opening in the lower part of the stem and smoked over." Mr. Dall also informs the writer that this large pipe with the movable plate in the stem is native to the Asiatic side of Bering Strait. In this stem they also use willow and alder, which, when sufficiently saturated, are smoked. Both willow and sumac are mixed with the tobacco to make it go farther.

Nordenskjöld refers to the Chuckchee pipe, which is similar to that from Point Barrow, which resemble those of the Tunguse. The tobacco, he says, is often first chewed, then dried behind the ear, and kept in a separate pouch suspended from the neck, to be afterwards smoked. The pipes are so small, he remarks, like those of the Japanese, that they may be smoked out with a few strong whiffs. The smoke is swallowed. Even the women and children smoke and chew, and they begin to do so at so tender an age that we have seen a child that could indeed walk, but still sucked his mother, both chew tobacco and smoke.[4]

Mr. W. H. Hooper refers to the Tuski "pipes of wood and ivory, either divided along the middle into two parts for convenience of cleaning, or

[1] The Indians of Cape Flattery, p. 27, Washington, 1870.

[2] Alaska and its Resources, p. 82, Boston, 1890.

[3] Idem, p. 81.

[4] The Voyage of the Vega, p. 116, London, 1881.

with a large trapdoor in the under part which allows a few pieces of dry grass to be laid inside to absorb the moisture, which when closed is covered with a strip of leather which effectually keeps it air-tight. When about to smoke, a pinch of hair plucked from the deerskin frock is pushed with the pricker down the very small hole in the bowl of the pipe. This is to prevent the tobacco from drawing through."[1]

Mr. Henry Seebohm illustrates a pipe of the Tungoosk, which so closely resembles certain of the pipes of the Alaskans, both in bowl and manner of lashing the same to the stem, as well as the shape and lashing of the stem itself, as to leave little doubt of their common origin.[2]

The same author illustrates a pipe of the Samoyede which should be classed as of the same type as those pipes here described, yet presenting other characteristics than such as are embodied in the Alaskan specimens.

Arising probably from similar conditions is an Afridi pipe from the Khyber Pass, in India, illustrated by Pritchett, which has a small brass bowl and a stem composed of two pieces of wood which have first been scooped out and subsequently lashed together with thongs, and so closely resembles the Alaskan type that one would be perfectly excusable in mistaking it for the latter.[3] It appears difficult to determine the period when the pipe appeared first on the extreme northwestern coast of America, and equally so to determine whence it came, its form in many respects resembling more nearly the Chinese than the Japanese type, though there are accounts of the Russians having in the last century attacked Japanese islands and brought away prisoners to Kamtschatka, pipes being referred to among articles enumerated as taken at the same time. The extent of communication between Kamtschatka and the Japanese is little known, though Japanese was taught at Irkutsk about 1807, according to G. R. Von Lingsdorf, who says: "It is worthy of remark that by command of Her Imperial Majesty, the late Empress Catherine, the Japanese language was taught, and the teacher of it was a native of Japan."[4]

Cook informs us that, in 1778, of the islanders near Kamtschatka there were few who did not both chew, smoke, and take snuff, a luxury which he truthfully says bids fair to always keep them poor.[5]

It is known that about 1764 the Kamtschatdales "sometimes smoked tobacco" which they received from Europe.[6]

"It is said that the Kamtschatdales knew the use of iron even before

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[1] Tents of the Tuski, p. 176, London, 1853.

[2] Siberia in Asia, p. 149, London, 1882.

[3] R. T. Pritchett, Ye Smokiana, p. 66.

[4] Voyages and Travels, 1803–1807, Pt. 2, pp. 297, 381, London, 1813.

[5] Voyages to the Pacific Ocean, p. 513, London, 1784.

[6] The History of Kamtschatka and the Kurilski Islands, p. 276, translated by James Grieve, M. D., Gloucester, 1764.

the arrival of the Russians; that they received it from the Japanese who came from the Kurilski Islands, and once to the mouth of the river Kamtschatka, and that the name which the Kamtschadales give the Japanese of Shisman comes from 'shish,' a needle. The Japanese certainly used to come and trade to the Kurilski Islands, for I found there a Japanese saber, a Japanese waiter, and silver earrings, which could be brought from no other place."[1]

The Tchuckchi pipe has apparently traveled across Bering Strait quite recently, judging from the similarity in the pipes on the Asiatic and American sides. The most natural supposition appears to the writer to be that the Tchuckchi in their turn received the pipe from the Japanese by way of the Kurile Islands, they possibly in turn receiving it from the Chinese.

MISCELLANEOUS PUEBLO PIPES.

In the southwestern part of the United States are found a class of pipes usually made of pottery, certain of which resemble the Siouan pipe in a measure, though there is a distinctiveness about them entitling them to be classed by themselves. Those in the collection of the U. S. National Museum are all made from a rude, hard burned, and unglazed black pottery. Some have projections similar to the Sioux pipe, the prow being approximately the same size as the stem, as seen in fig. 194. This specimen, except that it is made of this hard pottery, is not very unlike in outline from the Siouan pipes of the Upper Missouri River drainage. The stem, however, of these southwestern pipes is heavy and thick, as are the walls of the bowls, the stem opening being formed by inserting a stem of grass through the plastic clay and burning it out in firing the pipe.

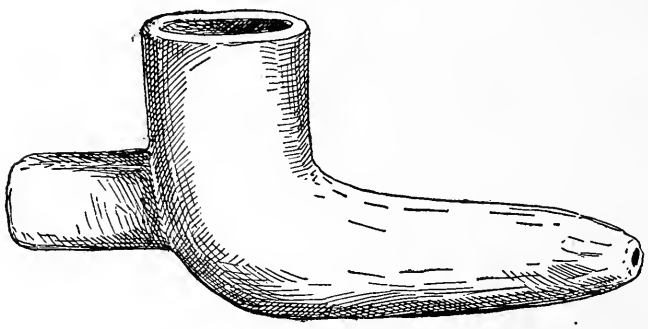

Fig. 194.

MODERN PUEBLO PIPE.

Cat. No. 22968, U.S.N.M. Collected by J. W. Powell.

Fig. 195, from the Wolpi pueblo in Arizona, collected by Col. James Stevenson, is made of this typical hard unglazed pottery, similar to specimens found at times among the Iroquois graves of Canada or the United States, near Lakes Erie, Ontario, and the St. Lawrence River, which have similar stem openings. The inverted terrace-like projection below the bowl indicates how varied it was, and that it was probably intended to hold the pipe by when it was smoked. The outline of the exterior of bowl and stem of this pipe may be duplicated in soapstone in the Carolinas. The pottery from which these pipes are made, though of recent manufacture, does not compare with that of the ancient

[1] The History of Kamtschatka and the Kurilski Islands, p. 186.

pueblo tubular pipes, which in its turn is less firm in texture than the rectangular Mexican pipe with glazed surface, which the writer attributes to Spanish origin.

Fig. 196 is a hard-burned and unglazed thick bowl and thick-stemmed pottery specimen of dark brown color from New Mexico, collected by Maj. J. W. Powell. It is 2 inches long and 1½ inches wide. The projection is square, and the stem hole is evidently intended for a separate stem. The difference in position of these projections, without other evidence, would be almost convincing that the form of this pipe was in a transition stage.

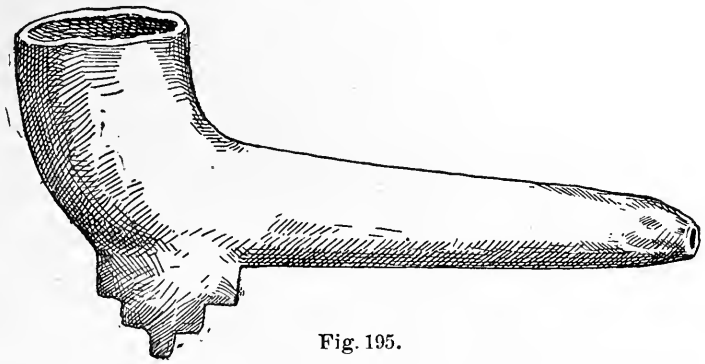

Fig. 195.
WOLPI PUEBLO PIPE.
Wolpi Pueblo, Arizona.
Cat. No. 128460, U.S.N.M. Collected by James Stevenson.

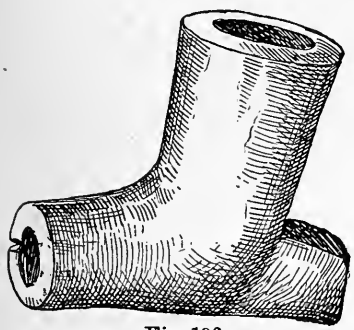

Fig. 196.
MOKI PUEBLO PIPE.
Moki Pueblo, New Mexico.
Cat. No. 22969, U.S.N.M.
Collected by J. W. Powell.

Fig. 197 represents a cast of a greenstone pipe found near Santa Fe, New Mexico, collected by Maj. W. S. Beebe. It is of unusual size, being 12 inches long and 7½ inches high, having a bowl the greatest exterior diameter of which is 2½ inches. This pipe is of typical Mexican shape, and is finished with such artistic skill as to leave little doubt of its being of ceremonial importance to the tribe possessing it. The stem curves gracefully into the bowl, the top of which is carved in the form of an eagle or hawk facing the smoker. Crawling along the sides of the stem and its base, reaching two-thirds of the way up the bowl, are three rattlesnakes; the fourth snake reaches along the upper part of the stem nearly to the end, its tail being on the bowl. The rattles of the snakes are well defined. Above each of the snakes, crawling up the bowl, are the figures of three separate human beings, as though each snake were crawling toward a separate person. The original of this pipe, which appears to be highly polished, in the writer's opinion is one of those presented to

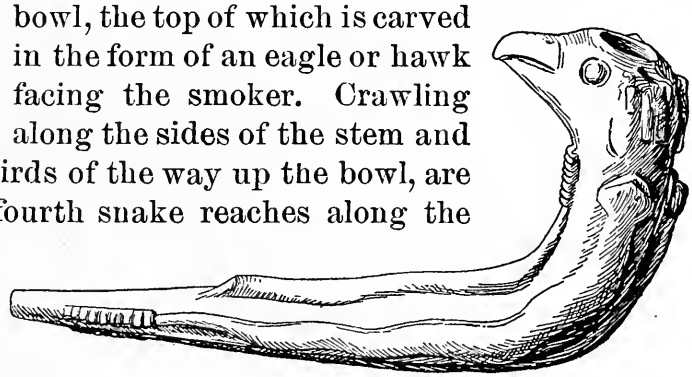

Fig. 197.
GREEN STONE PIPE.
Santa Fe, New Mexico.
Cat. No. 99278, U.S.N.M. Collected by W. S. Beebe.

the Indians upon certain solemn occasions in commemoration of some treaty, and which were intended as reminders of some notable event or agreement undertaken. To one such in New York a reference has been preserved.

Dr. J. Walter Fewkes found the natives of Tusayan, New Mexico, smoking upon all ceremonial occasions the *Nicotiana attenuata* (Piba; from napi, leaf; paku moisture), which forms also part of nearly all prayer offerings.[1]

Fœniculum officinale (kwanwa-piba; from kwanwa, sweet; piba, tobacco)[2] is used as a substitute for piba, but is never smoked ceremonially. The same term applies to tobacco obtained from the whites, which is not used ceremonially.

DELAWARE TYPES.

Holm, as quoted by Dr. C. C. Abbott, says of the Delaware Indians: "They make tobacco pipes out of reeds about a man's length. The bowl is made of horn, and to contain a great quantity of tobacco. They generally present these pipes to their friends. They made them otherwise of red, yellow, and blue clay, of which there is a great quantity in the country, also of white, gray, green, brown, black, and blue stones, which are so soft that they can be cut with a knife. Of these they make their pipes a yard and a half long."[3]

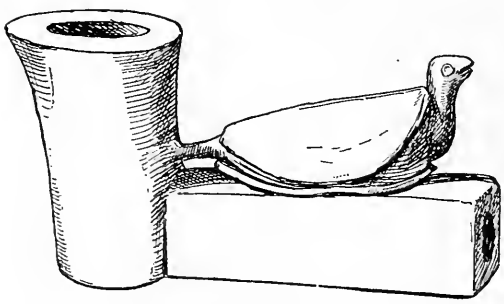

Fig. 198.

DELAWARE PIPE.

Delaware.

Cat. No. 31897, U.S.N.M. Collected by S. S. Haldeman.

Fig. 198, collected by Prof. S. S. Haldeman, of Delaware, differs in certain respects from pipes found elsewhere and points to a type distinct from any yet described. This pipe is about 3 inches long and is made from a compact black stone, probably a slate. The round bowl of this type often has a slight lip in front, and the stem is usually externally square, with some animal carved upon it facing the smoker. The diameter of the bowl opening is five-eighths of an inch, while that of the stem is but one-fourth of an inch; this proportion usually being constant in all typical specimens. The turtle crawls toward the smoker, its head, neck, eyes, and both shells being distinguishable, though the feet and legs are not. The work on this pipe appears to be done by means of steel tools, file marks being distinct. Dr. Abbott refers to pipes of this type—one from Delaware, the other from Pennsylvania, made of a greenish compact serpentine.[4]

Another specimen of the Cherokee pipe (fig. 199) found in Cherokee

[1] American Anthropologist, January, 1896, p. 19.

[2] Idem, p. 20.

[3] Primitive Industry, p. 316, Salem, 1881.

[4] Idem, pp. 321, 322.

County, North Carolina, and collected by Gen. J. T. Wilder, is 3½ inches long and made from a dark-green chlorite. The characteristic lip of the bowl is pronounced, the bear facing the smoker supplants the turtle of the preceding specimen. The bear stands on all four feet, and is carved in the round, his front and hind claws being represented, though the mouth and eyes are not. Pipes of this type are usually ground to quite a smooth surface, and are decidedly symmetrical, being among the most modern of distinctively American Indian pipes.

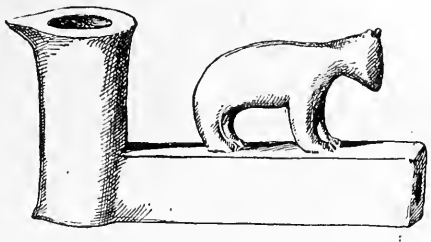

Fig. 199.
CHEROKEE PIPE.
Cherokee County, North Carolina.
Cat. No. 31385, U.S.N.M.
Collected by J. T. Wilder.

Another pipe of this type (fig. 200) from North Carolina and collected by Mr. James Mooney, differs from the preceding figures only in the character of the stem, which is round. The animal figured is probably a gray squirrel, with its bushy tail, in the act of eating, or rubbing its face. The specimens of these pipes will in all probability, when hereafter found, demonstrate that while bowl and stem cavities remained constant the animals upon their stems will differ because of their having a totemic significance, as appears highly probable of animal figures wherever found, especially as those which are recognizable are known totems of American tribes.

Mr. D. B. Brunner figures a pipe of this type from the collection of Gen. George M. Keim, of Berks County, Pennsylvania, which has a square stem and is without ornamentation and made of a dark serpentine, the pipe being finely polished.[1]

In the museum of the University of Pennsylvania are two pipes of this type from North Carolina, one plain, the other having a bear on the stem.

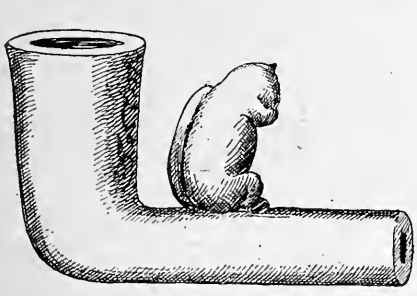

Fig. 200.
CHEROKEE STONE PIPE.
Cherokee County, North Carolina.
Cat. No. 130497, U.S.N.M. Collected by James Mooney.

INDETERMINATE TYPES.

Fig. 201, from Hanover, Jefferson County, Indiana, collected by Mr. George Spangler, is a type specimen of a distinct class of pipes of rectangular shape, which are found in several States and are usually finished with some skill. The one here figured is 3 inches long, 1½ inches high, and is 1¼ inches wide, with a bowl opening three-fourths of an inch in diameter, while that of the stem is only three-sixteenths of an inch. They are apparently intended for smoking without a separate stem, and in dimensions of bowl and stem cavities approached those of the curved-base mound pipes. This one is made of a light gray ophiolite and is finished with unusual skill, the surface having a glass-like

[1] The Indians of Berks County, Pennsylvania, p. 96, fig. 97, Reading, 1881.

polish. Every exterior tool mark is obliterated. The bowl has what appears to be quite an unnecessary thickness on the side from the smoker, though it is evidently not the result of accident.

Fig. 202, from Pike County, Missouri, collected by Mr. J. C. Watkins, is made of a light-gray indurated clay, and is about the same size as the preceding specimen. Facing from the smoker there is carved the head of a bird or beast, it is impossible to say which; the surface, however, is merely smoothed, without effort at polishing, the creature's eyes are cut in intaglio, the mouth being indicated by a straight line cut into the stone. The head is slightly broader than the bowl, on the upper right-hand rim of which are eight incised lines, whether for ornament or as a record of some event it would be impossible to say. These bowls are evidently bored by means of tubular metal drills, as indicated by the uniform size of their perforations, though there is in the U. S. National Museum collection a specimen made of catlinite which was found in Baraboo, Sauk County, Wisconsin, which has been bored with a solid drill. The surfaces of this latter are merely smoothed, without effort at polish, the specimen having evidently been blocked out by sawing. The pipes of this type in the collection of the U. S. National Museum are almost too few in number for one to draw definite conclusions from, and while so different in exterior from the curved-base mound pipes, there appears a kinship between the two in size of bowl and stem. Another pipe of this character was referred to by Mr. John P. Jones, in a letter to Dr. E. A. Barber, as coming from Keytesville, Missouri.

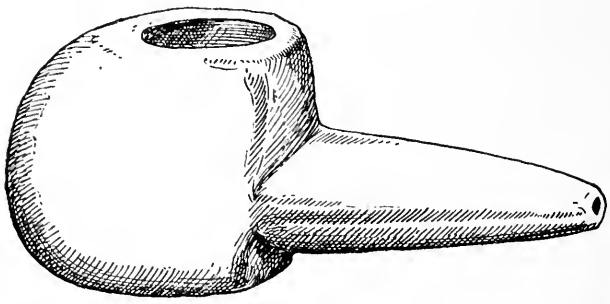

Fig. 201.
RECTANGULAR PIPE.
Jefferson County, Indiana.
Cat. No. 39073, U.S.N.M. Collected by George Spangler.

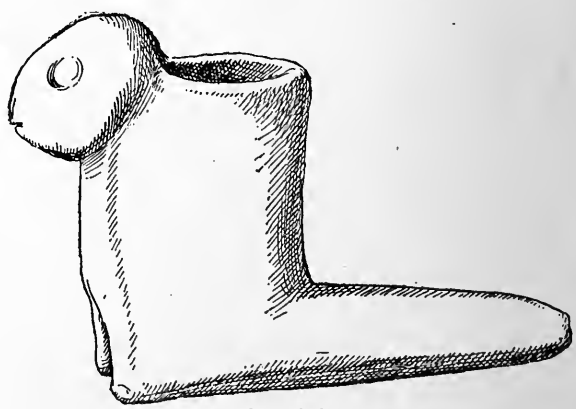

Fig. 202.
RECTANGULAR PIPE.
Pike County, Missouri.
Cat. No. 34383, U.S.N.M. Collected by J. C. Watkins.

Fig. 203, from Arizona, collected by Maj. J. W. Powell, is in form not unlike the familiar Powhatan pipe of commerce. It is made of a fine-grained red stone, ground into shape with great delicacy, the walls of the bowl being scarcely more than one-sixteenth of an inch thick, though

the walls of the stem may be one-eighth of an inch, the dimensions of the pipe being approximately 1 inch in height, length, and breadth. Its characteristics would appear to indicate a recent period, Major Powell having obtained it from natives still using it.

Fig. 204 is of similar type to the preceding figure and is from southern Utah. It was collected by Maj. J. W. Powell. Though larger than the last, being about 3 inches high and made from a translucent green stone, the walls of the bowl are as delicate and as thin as fine china, the pipes being evidently intended to be smoked with wood, reed, or bone stems. Though these pipes are evidently of Indian origin and finished with unusual skill their form appears to the writer to be due to white influences, as the pipes themselves are quite modern, though there has been no effort to polish them.

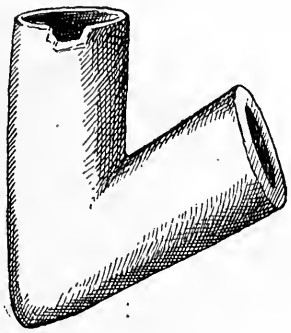

Fig. 203.
ANGULAR PIPE.
Arizona.
Cat. No. 17231, U.S.N.M.
Collected by J. W. Powell.

Among the many pipes of the U. S. National Museum and in other great collections there are occasionally encountered specimens which it is difficult to classify, owing to some peculiarity of material or of treatment, though the occurrence is so rare as to argue in favor of the correctness of the unity of given types, especially when they are found to occur with scarcely an exception in contiguous geographical areas. It may be due in a measure to the fact of other pipes of a distinctive character not having yet been discovered in sufficient quantities to enable the type to be well recognized, or it may well be and probably is to a great extent due to the fancy of their makers desiring to vary a prevailing type, or they were made by white people for sale to the Indians. That pipes of a given area should on occasion be found far from their natural home should not be surprising, when it is considered how great were the distances traveled at times by the Indians on hunting or war parties. Smith, in 1608, found articles of European manufacture in possession of the Susquehannocks, at the head of Chesapeake Bay, which had probably been obtained from the French on the St. Lawrence; and the French, in descending the Mississippi, found the natives in possession of objects which had found their way over the mountains from the English along the seaboard, and heard from the natives also of the Spanish in the Southwest. The resemblance of natural objects of stone or wood to animal forms may possibly account for certain pipes having unusual shapes.

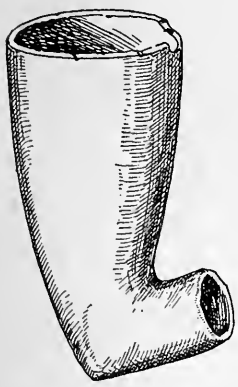

Fig. 204.
ANGULAR PIPE.
Southern Utah.
Cat. No. 14335, U.S.N.M.
Collected by J. W. Powell.

Fig. 205, from Chautauqua County, New York, collected by Mr. O. Edson, is quite a remarkable example of concretion of serpentine some-

what weatherworn, which greatly resembles a bird upon a perch, yet it has on it four shallow depressions made by a solid drill point and along the side of the base a slight groove ground into the stone, slightly smoothed, which constitutes every particle of artificial work on the whole specimen, all of which could not have required one hour's time. The object is 5 inches long and $3\frac{1}{2}$ inches high, with a width of $1\frac{3}{4}$ inches. The body appears like that of a bird, is well formed, and of so distinct a character as to have suggested to many persons that a parrot was here represented, and the drill marks and grinding tool have been brought into play to heighten the resemblance. The pipes herein referred to as not properly belonging to any type described may upon further investigation be assigned to some one or other of the dozen or more figured, or may be found to belong to types of which there are examples in collections with which the writer is not familiar. They may be very ancient or possibly quite modern.

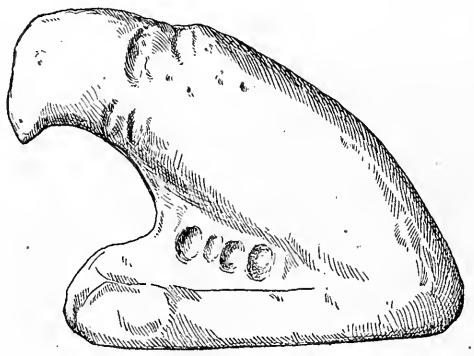

Fig. 205.
NATURAL FORM.
Chautauqua County, New York.
Cat. No. 22167, U.S.N.M. Collected by O. Edson.

It should be remembered, however, that among the American pipes archæologists as a rule are prone to attach to them too great an antiquity, and consequently few pipes are described as belonging to the historic Indian. Mr. M. C. Read says that "near Willoughby, in Lake County, Ohio, is a site of an Indian village which has furnished a great variety of relics. A very interesting and instructive collection of pipes finished and unfinished was made from this locality and is now in the Metropolitan Museum in Central Park, New York. These show that water-worn pebbles were selected, exhibiting slightly an animal form, which the pipe maker picked into a more perfect animal shape, without much apparent design of imitating any particular species. These were the work of modern Indians and were greatly inferior to the specimens obtained from the mounds."[1]

Prof. Daniel Wilson sees matter worthy of note in the supposed correspondence between the ancient Peruvian tobacco mortars and the stone pipe of the mound builders, with their imitations of birds of the southern continent.[2]

Like resemblances may be observed between many objects from the southern and northern continents, though that there was relationship between them, especially in the pipes, will not be conceded at the present day, for there is no single instance in which a southern bird or animal has been recognized upon a mound pipe, nor, so far as the writer

[1] Archæology of Ohio, p. 51, Cleveland.
[2] Prehistoric Man, I, p. 381, London, 1876.

can learn, did the Peruvians or other South Americans ever use the pipe prior to the coming of the Europeans.

Squier and Davis illustrate, however, a pipe apparently of the character of that illustrated by De Bry, which was found in a mound in South Carolina.[1]

A somewhat similar specimen is figured by Thruston as coming from the stone graves of Tennessee.[2]

SOUTHERN TYPES.

These pipes, however, differ greatly from those found by Mr. Clarence B. Moore in his extensive and very careful explorations made in Florida, in its mounds, which were commonly of the type having large bowls and stems, such as have been herein referred to. One of these, found in Grant mound, had a small ornament of sheet copper fastened by an encircling cord beneath the margin of the bowl facing the smoker which crumbled into dust upon exposure to the air,[3] and it is believed that the true Florida pipe will be found to belong to the large bowl and stem type, of which Mr. Moore has found a number, both of stone and of earthenware. In the Steiner collection, in the U. S. National Museum, there is an interesting pipe of stone from the Etowah mound in Bartow County, Georgia, the stem of which is broken off and upon which there is carved a grotesque figure facing the bowl, of which it is difficult to say whether the workman designing it intended it to represent a man or a monkey.

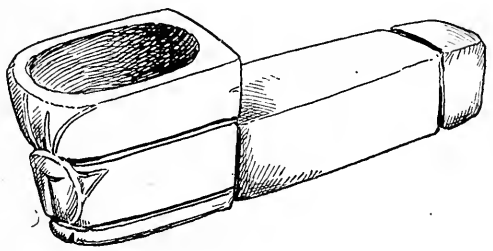

Fig. 206.

CHEROKEE TYPE OF SAWED STONE PIPE.

Howard County, Missouri.

Cat. No. 62030, U.S.N.M. Collected by C. T. Turner.

Prof. Cyrus Thomas illustrates a pipe from Hollywood mound, in Richmond County, Georgia, representing, he claims, the head of an owl, though he found in the same mound, 6 feet below the surface, a fragment of blue porcelain, upon the surface of which there is the well-recognized head of a milch cow.[4]

This pipe, however, has the band upon it so commonly noticed among the pipes of North Carolina and Georgia. One of the most remarkable pipes which has come under the writer's notice is that referred to in a private letter of Col. Bennett H. Young, of Louisville, Kentucky, the stem of which was covered with mica. "Very thin flakes were used in this ancient electroplating and by some kind of glue known to these people, the mica being rolled around the stem of the pipe and put on very artistically and in such manner that the chem-

[1] Ancient Monuments of the Mississippi Valley, p. 195, fig. 80.

[2] Antiquities of Tennessee, p. 180, fig. 78, Cincinnati, 1890.

[3] Certain River Mounds of Duval County, Florida, p. 36, fig. 28.

[4] Twelfth Annual Report of the Bureau of American Ethnology, p. 326, fig. 205.

ical changes in the soil of at least five hundred years had not disturbed it in the least."

Colonel Young thinks that, in Kentucky, pipes of stone antedate and are more numerous than clay pipes, the typical shapes of which are of animals, now and then birds, paroquettes being more numerous than other birds. Among the minerals employed in pipe manufacture he mentions oolitic limestone, gray limestone, bastard granite, slate, and frequently catlinite. Figures, he says, not always, but generally, face the smoker. The stems were of clay and also of reed. One pipe from Richmond, Madison County, Kentucky, was made from coral. In western Kentucky, on the Kentucky and Cumberland rivers, clay was always used, but pottery pipes are rare after passing Barren River, going east. Mr. Gates P. Thruston illustrates a type pipe from the stone graves of Tennessee, which is closely allied to these pipes, the bowls of which are clasped in a person's arms; the peculiarity of one is that the head of the figure is attached to the pipe bowl and in front of it, the arms being represented with the open hands pressing against the breast; the legs are drawn up the bowl, projecting from the back.[1]

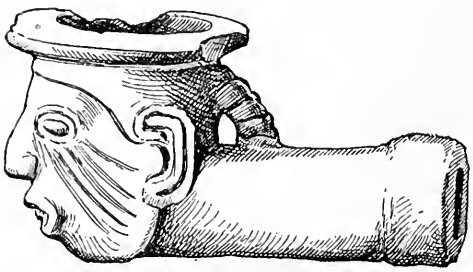

Fig. 207.
CHEROKEE STONE PIPE.
Bradley County, Tennessee.
Cat. No. 131619, U.S.N.M. Collected by J. P. Rogan.

A fine-grained, small, calcareous brownstone pipe from Howard County, Missouri (fig. 206), collected by Mr. C. T. Turner, is only 2 inches long, has a square stem, and is a well-finished little specimen. On the side of the bowl away from the smoker a quaint human face has been cut by incisions to represent face, eyes, and nose, and from the top of the incision forming the face a number of gracefully curved lines arise, as though intended to represent plumes. While the bowl appears unique, its stem would indicate that it belonged to the Cherokee type.

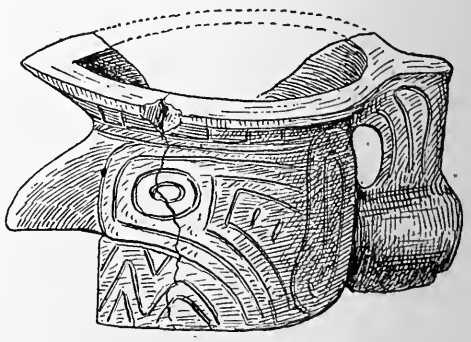

Fig. 208.
CHEROKEE POTTERY PIPE.
After Clarence B. Moore. Certain aboriginal mounds of the Georgia coast.

One of the most artistically symmetrical stone pipes of the U. S. National Museum collection (fig. 207) is from Bradley County, Tennessee, collected by Mr. J. P. Rogan, and is 3 inches long. The man's face is well executed, facing from the smoker, and appears to represent an Indian, upon whose face there are five gashes on the left cheek, as though intended to represent paint marks. The ear stands well out, and at the

[1] Antiquities of Tennessee, p. 180, fig. 80.

back of the head the hair is plaited in a queue and attached to the stem so as to form a space between the queue and the head, by which a string could be attached, if desired. The mouth and teeth are both prominent. The treatment of the head is unique, though the band on the stem appears to connect the pipe with those found in North Carolina, Georgia, and Tennessee, and shows in what varieties these pipes are at times found. The material from which it is made is a compact stalagmite.

Fig. 208, from a Georgia mound, shows in pottery identical treatment with the preceding figure from Tennessee, though the treatment of the head is certainly very highly conventionalized and the queue and rim of the bowl, as well as the face marks, whether paint or tattoo, and the teeth would hardly be recognized were it not for the Tennessee stone specimens furnishing a guide with which the Georgia pipe may be compared. In fact the analogy in pipes from Georgia and Tennessee is often observed.

Squier and Davis figure a clay pipe found opposite the mouth of the Hocking River, in Virginia, "where there are abundant traces of an ancient people in the form of embankments, mounds, etc.,"[1] which represents a head of a person whose hair appears to be done up more in the manner of the whites than that of the natives, and Jones also figures one form which has the band upon the stem.[2]

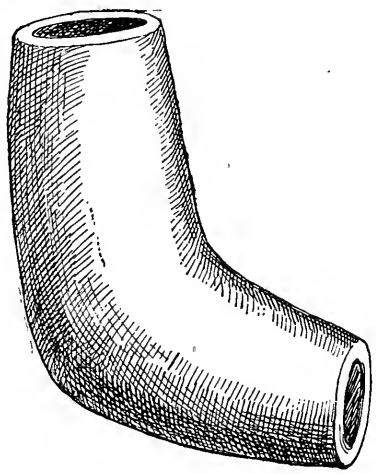

Fig. 209.
STONE PIPE.
Jackson County, Missouri.
Cat. No. 174014, U.S.N.M.
Collected by James Rodman.

SOME UNIQUE TYPES.

Fig. 209 is a dark-green speckled serpentine pipe 2½ inches in greatest diameter, with a width of 1½ inches, being a surface find from Jackson County, Missouri, and collected by Dr. James Rodman, of Kentucky. It is of an attractive green and white color, having been smoothed with unusual care, the outer surface having all tool marks obliterated. The bowl and stem openings, each of five-eighths of an inch in uniform diameter to their point of intersection in the center of the specimen, have been bored by means of a metal tubular drill. In shape, material, and character of finish this pipe is unique.

A very remarkable instance of the distance which Indians will carry material is noted by Dr. Daniel Wilson. "Dr. Kane," he says, "informed me that in coming down the Athabasca River, when near its source in the Rocky Mountains, he observed his Assinaboine guides select the favorite bluish jasper from among the water-worn stones in the bed of the river to carry home for the purpose of pipe manufacture, although they were then fully 500 miles from their

[1] Ancient Monuments of the Mississippi Valley, p. 194, fig. 77.
[2] Antiquities of the Southern Indians, plate XXIV, fig. 3.

lodges,"[1] the reference to jasper being used for pipe making is probably erroneous. The stone referred to was more likely a serpentine. The difficulty of boring jasper would be very great without corundum or sand of similar hardness, and when drilled its hardness would probably cause it to break from heating, on being smoked. In the several thousand pipes in the U. S. National Museum collections the writer does not recall having encountered a single one of jasper, nor does he recall such a one being elsewhere described.

Fig. 210.
WOOD AND LEAD PIPE.
Rhode Island.
Cat. No. 10080, U.S.N.M. Collected by George Gibbs.

This pipe of wood from Rhode Island (fig. 210), collected by Mr. George Gibbs, is artistically finished, being artistically carved in the round with more than ordinary skill. It is 3 inches long, 4 inches high, with a width of $1\frac{5}{8}$ inches. To prevent the bowl, which appears to be made of laurel or briar root, from burning out, it has been lined with lead, which has been built up to prevent the bowl from burning through. This lead has been subsequently rubbed down so as to make a uniform surface. The figure is nude, represented as though sitting with one leg on each side of the stem, the elbows on the knees, and the head resting in the hands, as though the individual were in a brown study. While anatomically this figure may be open to criticism, the pose is decidedly graceful and the manipulation or tool work far from that of a novice.

Mr. David Boyle has figured two most interesting stone pipes found in Ontario, which are nearly 5 and 3 inches long, respectively, one made of a limestone and the other of a soapstone, the one from Ontario County and the other from Durham County, each of which is made in the shape of a turtle, executed with skill to the minutest detail of carving.[2]

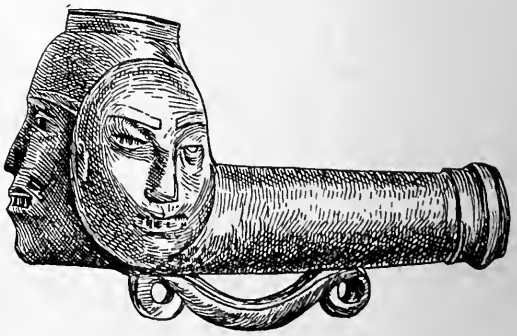

Fig. 211.
PORTRAIT PIPE.
San Salvador, Central America.
After photograph of Andrew E. Douglass.

Mr. Andrew E. Douglass has in his collection (fig. 211) a most interesting and highly ornate portrait pipe, which is said to have been found deep in a mine in San Salvador, Central America, which is of the most unique character in the writer's experience, it being made from a dark-blue or gray slate, similar to that worked on Queen Charlottes Island, in the Pacific. There are upon the

[1] Prehistoric Man, I, p. 391, London, 1876.

[2] Appendix to the Annual Report of the Minister of Education of Ontario, 1896–97, pp. 52, 53.

bowl three human faces, none of which face the smoker, those on the sides strongly resembling masks. The pipe is 4½ inches long, with a height of 2 inches. On the underside of the stem there is a scroll-like handle, carved from the stone, slightly curved and rolling at each end, where it is attached to the stem, while around the end of the stem itself there is a band such as is often encountered on the Southern Atlantic coast of the United States, but unknown on the Pacific in the writer's experience. This scroll-like handle is carved by one familiar with heavy metal and was said to be found 14 feet from the surface of a mine worked at the time of the conquest.[1] The face of this pipe on the far side of the bowl has a mustache. The pipe has been bored by means of a pointed steel tool. The writer was also shown by Mr. Douglass a photograph of a somewhat similar pipe which is in the Christie collection of the British Museum, which is said to have come from British Columbia. Another of this character, having only one head upon it, has a beard on the face, and is said to come from Pembina Red River of the North. These several specimens come from widely separate areas, though it appears to the writer that all of them originally started from the blue slate quarries out of which the Indians of Queen Charlottes Islands work so many really beautiful objects. Just as the natives of the northwestern coast of America at the present day work pipes into many grotesque forms for the purpose of attracting the white man's fancy and consequently his money, so the writer imagines that the early European on the continent, along the Atlantic coast and the interior rivers and lakes, carved of the steatites and chlorites and indurated clays pipes of a character for which the Indian would pay the largest price in furs, and eventually traded to the Indian tools of hard metal fit to saw and scrape the softer stones suitable for tobacco pipes, a practice which the Indian himself would follow, and we know from more than one source that he did imitate the white man's design.

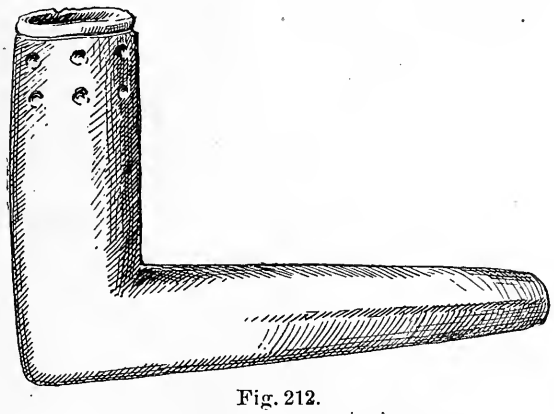

Fig. 212.
RECTANGULAR STONE PIPE.
Indiana.
Cat. No. 45587, U.S.N.M. Collected by H. T. Woodman.

Fig. 212 is a rectangular pipe made of a dark-green serpentine. It is 3¼ inches long by 2⅛ inches in height, found in Indiana, collected by Mr. H. T. Woodman. It is smoothed over its whole surface and ornamented by a double row of small holes bored into the bowl near the top and has a slight incision around the exterior of the rim encircling the bowl. This specimen is sufficiently distinct from other specimens to entitle it to a place by itself, though its age is probably recent.

[1] American Antiquarian, November, 1889, p. 349.

ATLANTIC COAST PIPES.

A most interesting type of pipe is found in the shell heaps south of the Hudson, certainly as far as Maryland, and perhaps yet farther, which appear related to certain types found in North Carolina, Georgia, and Tennessee, through a territory which at the first advent of the whites appears to have been inhabited by Algonquin, Siouan, and Iroquoian tribes, a more critical study of which will possibly connect them with pipes of the St. Lawrence River regions, especially those pipes with flaring bowls resembling brass hunting horns. There is an almost insurmountable difficulty in the study of any primitive handiwork of the American Indians, owing to the meager records preserved by those who came in first contact with them. From historical data there is room to suspect that many expeditions had reached the shores of what is now the United States and Canada between the years 1535 and 1630 of which we have no records. The extent of their trade may possibly not have been far from the sight of the ocean, though from the first arrival of the colonists, Spanish, French, English, Dutch, or Swede, the trapper and trader sought the wilderness for skins. Of these expeditions little is known, for none of them, if successful, would inform his acquaintance of the rich fields of sport or trade, but saved his knowledge for future profit to himself. Throughout the early period the most bloodthirsty feuds were engendered between the tribes by French, Spanish, and English in their efforts to retain the trade of a tribe, or confederacy, or to divert it from their rivals. The proximity of the Atlantic coast to the tribes west of the Alleghenies was offset by the water transportation and short carries of the French from the St. Lawrence, who did not hesitate, it has been said, to publish false maps of the interior for the purpose of misleading the English. Lawson says in 1700, and with full knowledge of the conditions then existing, "'Tis a great misfortune that most of our travelers, who go to this vast continent in America, are persons of the meaner sort, and generally, of a very slender education; who being hired by the merchants to trade amongst the Indians, in which voyages they often spend several years, are yet, at their return incapable of giving any reasonable account of what they met withal in those remote parts; though the country abounds with curiosities worthy of a nice observation."[1]

Notwithstanding many interesting papers of those who imagine they observe evidences in implements made by the American Indian indicating left-handedness, Lawson observes of them, "When they cut with a knife the edge is toward them, whereas, we always cut and whittle from us. Nor did I ever see one of them left-handed."[2]

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[1] John Lawson, The History of Carolina, Preface, p. v, London, 1714, reprint, Raleigh, 1860.

[2] Idem, p. 330.

We may imagine the process of drilling these long stemmed pipes, if made by the natives, by what this writer says of their using the straight shaft as a boring tool in perforating shells. "Thus," he says, "they roll continually on their thighs with their right hand, holding the bit of shell with their left, so in time they drill a hole quite through it, which is very tedious work; but especially in making their Ronoak, four of which will scarce make one length of wampum, the work was performed with a nail stuck in a cane or reed."[1]

He further says of their work: "At spare hours the women make baskets and mats to lie upon, and those that are not extraordinary hunters make bowls, dishes, and spoons of gum wood and the tulip tree; others, when they find a vein of white clay fit for their purpose, make tobacco pipes, all which are often transported to other Indians that perhaps have greater plenty of deer and game; so they buy with these manufactures the raw skins, which they dress afterwards."[2]

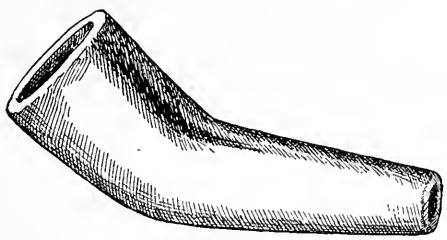

Fig. 213.

ATLANTIC COAST PIPE.

Monroe County, Tennessee.

Cat. No. 115546, U.S.N.M. Collected by J. W. Emmert.

An almost black chlorite pipe (fig. 213), $3\frac{1}{4}$ inches long, from Monroe County, Tennessee, collected by Mr. J. W. Emmert, has a uniformly smooth surface. The walls of both bowl and stem are each extremely thin, scarcely more than one-sixteenth of an inch; the stem hole has a conoidal opening decreasing in the 2 inches of its length from one-half to one-fourth of an inch in diameter. There are several pipes in the U. S. National Museum collection of this character from the Lenoir burial place in North Carolina, the perforations in the bowls and stems of which appear to indicate the use of metal tools. A pipe of this character was found in a mound on New River, southwestern Virginia, by Mr. H. H. Flanagan. It is made of pottery, which has upon its surface those small indentations, or mill marks, noticeable on the English molded trade pipe. These indentations show, however, that they have been incised since the baking of the pipe and consequent hardening of the clay.

A stone pipe, having all the characteristics of the English pipes of commerce, made from a material of light-brown color, was recently found on the Potomac River, near Shepherdstown, by Mr. Newton D. Sprecher. The same type is also found in the Lenoir burial place, made of a hard-burned black pottery.

Fig. 214, collected by Mr. John P. Rogan, is a pottery pipe, 4 inches long, decreasing in size from the bowl to the end of the stem. There is no indication of any wear caused by the teeth. The openings of the stems of pipes of this character are of a size indicating that they were

[1] John Lawson, The History of Carolina, p. 316, London, 1714, reprint, Raleigh, 1860.

[2] Idem, p. 338, 1860.

smoked with a stem of different material, the stem opening decreasing from the orifice, as is noted in the tubular pipes from California, which had short bird-bone stems held in with asphaltum. Were these pipes smoked without other stems it is probable there would be indications of the wear of the teeth, as is at times noticed in the old English pipes, the stems of which are often worn through by the smoker's teeth, though Indian pipes seldom show such wear. This form is said by Dr. Abbott to be also found in New Jersey.[1]

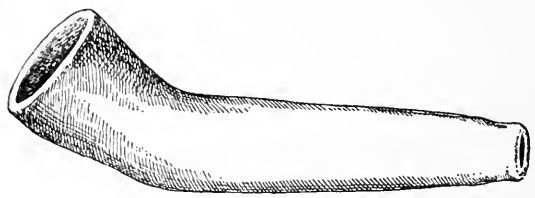

Fig. 214.
ATLANTIC COAST PIPE.
Lenoir, Caldwell County, North Carolina.
Cat. No. 82839, U.S.N.M. Collected by John P. Rogan.

A pipe of pottery from Fort Defiance, the Lenoir burial place, North Carolina, collected by Mr. J. P. Rogan (fig. 215), has no tempering material mixed with the clay from which it is made, a very noticeable occurrence in this type of pipes, and it is a matter deserving of particular attention to see if other objects were made of such earthenware. The bowl of this pipe, which flares out more than any of the preceding specimens, has walls at least one-fourth of an inch thick. This pipe is quite rude in its finish, the marks of the tools with which it was made being still perfectly distinct, the specimen being in outline not distantly related either to the tubular pipe or to the pipes used by the English in trade.

Fig. 215.
ATLANTIC COAST PIPE.
Caldwell County, North Carolina.
Cat. No. 83043, U.S.N.M. Collected by J. P. Rogan.

Fig. 216, of steatite, was found in a mound in Caldwell County, North Carolina, and was collected by Mr. J. P. Rogan. Its color is a light pink, the specimen being smoothed over its whole surface. The stone of which this pipe is made is extremely soft, and had it been held between the teeth of the smoker it is scarcely possible that there would not be marks on its stem, which, however, is perfectly smooth. The characteristics of this specimen are similar to those of pottery pipes, even in the thinness of the walls of both bowl and stem, which are scarcely if at all in excess of a sixteenth of an inch thick.

Fig. 216.
ATLANTIC COAST PIPE.
Caldwell County, North Carolina.
Cat. No. 83029, U.S.N.M. Collected by J. P. Rogan.

A soft gray steatite pipe (fig. 217) from a mound in Monroe County,

[1] C. C. Abbott, Stone Age in New Jersey, p. 342, Smithsonian Report, 1875.

North Carolina, collected by Prof. W. C. Kerr, of Raleigh. It is 6½ inches long, worked out with unusual skill, there being embossed on the bowl three circular decorations or eyes, the interiors of which are covered by a network of straight lines crossing each other at different angles, a fourth eye being in the form of a parallelogram with a number of circles, one inside the other. Running up the bowl from the stem there is a tongue shaped decoration which connects this specimen with pipes of the other forms from the same area. The stem at its juncture with the bowl is not more than five-eighths of an inch in diameter, and is covered its entire length with encircling lines about half inch apart, between which are incised ornamental lines running from one circling line to the other in graceful manner.

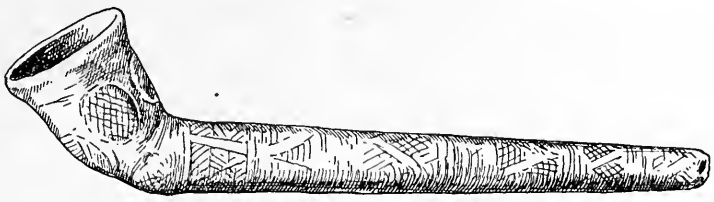

Fig. 217.
ATLANTIC COAST PIPE.
Monroe County, North Carolina.
Cat. No. 19664, U.S.N.M. Collected by W. C. Kerr.

This type is at times found in the shell heaps of Maryland, made from a bright red or pink pottery of homogeneous texture, which is ornamented in a somewhat similar manner, one of which, resembling the trade pipe, was found on the surface in Wicomico County and is now in the collection of the Maryland Academy of Sciences in Baltimore.

There is in the collection of the University of Pennsylvania a most ornate bright red clay pipe having four groups of crossed lines in separate panels; along the outside of each panel, running up and down the bowl, are a series of dots, all of which at first glance would pass for imitations of the cord marks so commonly seen on Indian pottery. The exact regularity of these dots, two at the side of each line of the panel, cause Mr. Stewart Culin to suggest that these panels are intended to be employed after the manner of the wampum belt, which appears to the writer to be possible.

Fig. 218.
ATLANTIC COAST PIPE.
Caldwell County, North Carolina.
Cat. No. 82835, U.S.N.M. Collected by J. P. Rogan.

A dark red, almost purple, specimen (fig. 218) of chlorite was found in a mound in Caldwell County, North Carolina, collected by Mr. J. P. Rogan. This delicately finished pipe is 11 inches long and from the base of the stem to the top of the bowl is scarcely 1¾ inches in height, with a diameter across the exterior of the bowl of 1⅝ inches; the stem is 9¼ inches and has a diameter at its juncture with the bowl very

slightly in excess of half an inch, which gradually decreases to one-fourth of an inch at the point, the whole stem being bored by means of a solid drill. The bowl has a flaring rim, and at the base of the stem a tongue is worked out of the stone in low relief on the bowl, reaching two-thirds of the way to the top as though made in imitation of a similar specimen of metal.

Though the tool marks are carefully obliterated from the stem, there is visible on the bowl a number of fine, straight, parallel lines, which suggest the probable use of a metal file. When the length of this pipe is considered it will readily be perceived how delicate was the manipulation of the tool not to break the stem in boring it. The length and delicacy of the stem would suggest that such an implement would be owned by individuals having sedentary habits, for otherwise its length of stem would make it liable to break in being carried from point to point. On this pipe, as has so often been observed of others, the mark of the teeth is not noticeable.

The writer's attention has been called to two pipes in the Essex

Fig. 219.

ATLANTIC COAST PIPE.

Essex County, Massachusetts.

Peabody Academy of Sciences.

County collection of the Peabody Academy of Science, in Salem, Massachusetts, very much of the character of the last figure, except, possibly, that the edge of the bowl does not flare out in so pronounced a manner. These pipes are about 6 inches long, are made of soapstone, and were found in Indian graves, which, from their great similarity to the southern specimens of the same type (fig. 219), the writer would be inclined to consider of a date subsequent to English settlement in the country.

SOUTHERN MOUND PIPES.

Fig. 220 is a dark green serpentine pipe, from Monroe County, Tennessee, collected by Mr. J. W. Emmert, which, because of the difference in the size of its stem opening and the enlarged band on the end of the stem, necessitates its being placed in a separate class, though the tongue-like appearance on the bowl shows it to be related to the pipes which we have described with similar decoration. Such pipes are evidently intended to be smoked by means of separate stems, and while the tongue would indicate a metal prototype. the band or enlargement of the stem would suggest it was copied from a plastic model. Pipes of this type

are substantially made, and their surfaces are carefully ground, this specimen being 3 inches long.

Fig. 221 is a dark green chlorite pipe collected by Mr. J. W. Emmert in Loudon County, Tennessee. It retains the type characteristics of tongue and band, and in addition there is a disk carved in relief on the base of the bowl, which is almost convincing that it is in imitation of a copper or other metal original, as the embossed disks on many of these pipes are identical with hammered metal, which is not unlike very similar figures observed on sheet copper found in mounds by Mr. Clarence B. Moore on the St. Johns River, Florida.[1]

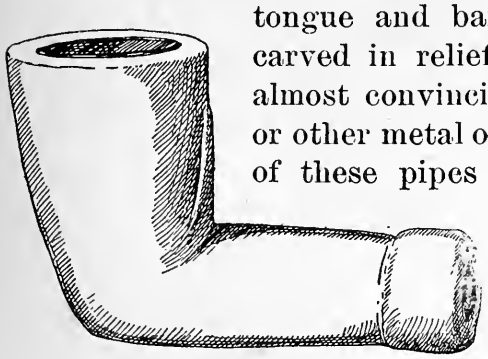

Fig. 220.
SOUTHERN MOUND PIPE.
Monroe County, Tennessee.
Cat. No. 115550, U.S.N.M.

In the Douglass collection there are a number of pipes of this type, one of which has an eye-like figure cut into the bowl. They are made of steatite, one of which, 14 inches long, was found in Sevier County, Tennessee. This type is also found in the Etowah Mound, Bartow County, Georgia, and other specimens in the U. S. National Museum have been found in other parts of these States and in South Carolina. On the last pipe figured the file mark appears again in evidence. The embossed circles vary in number from two to ten or more, and the specimens of this type from the Lenoir burial place in North Carolina and those from Loudon County, Tennessee, leave little room to doubt that both come from the same quarry.

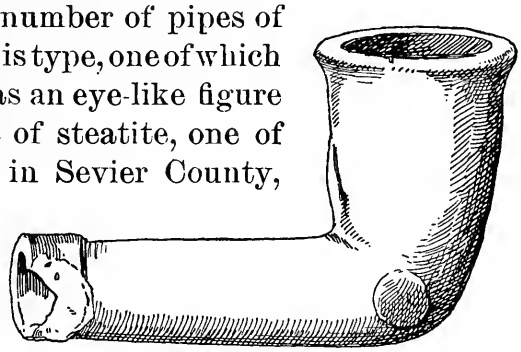

Fig. 221.
SOUTHERN MOUND PIPE.
Loudon County, Tennessee.
Cat. No. 116009, U.S.N.M. Collected by J. W. Emmert.

Fig. 222.
SOUTHERN MOUND PIPE.
Monroe County, Tennessee.
Cat. No. 115552, U.S.N.M. Collected by J. W. Emmert.

Fig. 222 is a chlorite pipe from Toco Mound, Monroe County, Tennessee, collected by Mr. J. W. Emmert. It is 5 inches long and $1\frac{3}{4}$ inches high, and has six of the embossed disks upon the bowl. The usual band on the stem, however, is absent; nor are there on this specimen any file marks distinguishable.

Fig. 223 is a heavy, large-bowled, dark green pipe of steatite from Ashe County, North Carolina, which was collected by Mr. W. C.

[1] Clarence B. Moore, Certain Sand Mounds on St. Johns River, Florida, pp. 140, 141.

Jirdonston, and, though the type characteristics are accurate in a measure, the specimen has an extremely modern appearance, file marks being quite distinguishable over the entire surface. The bowl is carefully bored to a depth of $1\frac{3}{16}$ inches, with an opening $1\frac{1}{8}$ inches and of uniform diameter. Even the band on the stem has here become perceptibly modified.

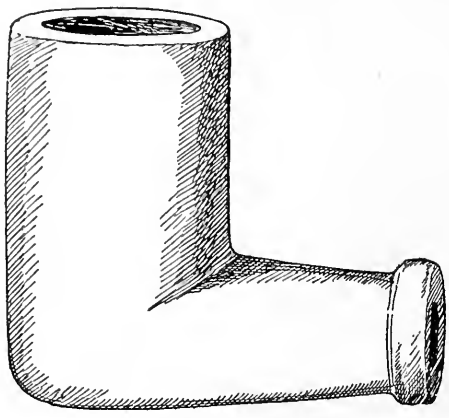

Fig. 223.
SOUTHERN MOUND PIPE.
Ashe County, North Carolina.
Cat. No. 98608, U.S.N.M. Collected by W. C. Jirdonston.

Fig. 224 is a diminutive chlorite pipe from Caldwell County, North Carolina, collected by Mr. J. P. Rogan in the R. T. Lenoir burial place. It has a length of $1\frac{5}{8}$ inches, with a height of an inch, and is in every way a symmetrical, though diminutive, specimen. The embossed eyes, while as distinct and in as high relief from the general surface as are the others, are so ground as to leave them in separate groups of three on a side. They are so rounded down to the surrounding surface by friction on the side of the disks as gradually to lose their identity on their edges.

In general characteristics fig. 225 is true to the type—though it is made of pottery—and was found in the Lenoir burial place, Caldwell County, North Carolina, by Mr. J. P. Rogan. It is 2 inches long. The clay appears to be mixed with a large proportion of mica for tempering. There are three disks in this instance on a side, while over the stem where it joins the bowl there is an enlargement, but neither band nor tongue. The similarities in the embossed circles on this pipe and those made of stone are most striking and unmistakable. The rim of the bowl is more pronounced than in any of the stone specimens, and into its outer edge eight notches are cut at intervals.

There is in the Douglass collection a pottery pipe of this type from Mazeppa, Georgia, upon the stem of which appears the band, which, as observed in the figures illustrated, is not a constant occurrence, though quite common in this type.

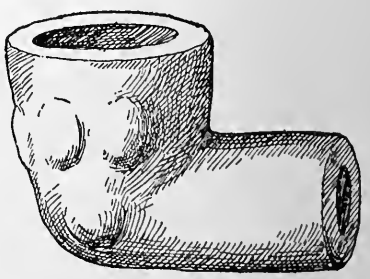

Fig. 224.
SOUTHERN MOUND PIPE.
Caldwell County, North Carolina.
Cat. No. 83046, U.S.N.M. Collected by J. P. Rogan.

Mr. Clarence B. Moore, in his recent exploration on the Georgia coast, illustrates an earthenware pipe (fig. 226) with the stem band, upon the bowl of which are a number of these disks with flattened peripheries in high relief, and from a point just below the rim of the bowl to the stem there is a loop of pottery, as in the Tennessee specimen figured, which appears to connect the two.[1]

[1] Certain Aboriginal Mounds on the Georgia Coast, fig. 21, Philadelphia, 1897.

A plain bowl pipe from Tennessee, with quite a short stem, in the Douglass collection, has a similar loop.

Fig. 227, also a pottery specimen, from the Etowah Mound, Bartow County, Georgia, collected by Dr. Roland Steiner, is made from a brick-red pottery, apparently containing no tempering. The type is the same always, though in this specimen the disks are very pronounced and the edge of the bowl is flared; encircling the bowl are a row of six of these knobs with rounded surfaces, below which are four others. The stem is partly broken, though enough remains to show that it flared, as does the bowl.

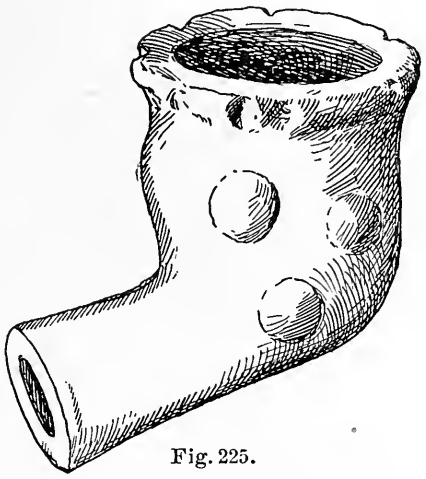

Fig. 225.

SOUTHERN MOUND PIPE.

Caldwell County, North Carolina.

Cat. No. 83048, U.S.N.M. Collected by J. P. Rogan.

Fig. 228 is also of pottery, found by Mr. J. P. Rogan in Bradley County, Tennessee. There is a difference between this pipe and the others, though bowl and stem hold relative proportions in conformity to the type; the pottery is red and the bowl flares somewhat, though the stem is shorter than is usually the case, the bottom of the bowl resembling the curve of the human knee.

Fig. 229 is in many respects similar in its characteristics to this type. This pipe is from Loudon County, Tennessee, and is made from a light-red clay, with very little admixture of tempering material. The bowl has a pronounced flare, and the specimen is 3 inches long, the top of the bowl being 2 inches wide. A peculiarity of the bowl of this pipe is that it is rectangular in its opening, as though a square plug had been driven into the clay while it was yet in its plastic condition. It was found by Mr. J. W. Emmert.

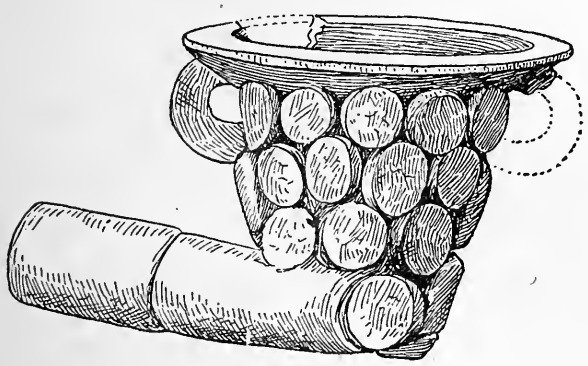

Fig. 226.

SOUTHERN MOUND PIPE.

After Clarence B. Moore. Certain Aboriginal Mounds on the Georgia coast, fig. 21.

Fig. 230 is made of an unusually hard-burned pottery, which was found in the Etowah Mound, Bartow County, Georgia, being about 3 inches long. The resemblance to the human leg in this figure is striking, the knee being slightly bent, the thigh forming the bowl, as the lower part of the leg does the stem, and above and below the supposed knee are a number of incised lines. As in the tubular pipe from the ruin of Sikyatki, New Mexico, bowl and stem each flare gradually. A pipe of similar form was found in the Lenoir burial place, though without the incised lines, and is now in the collection of the U. S. National Museum.

A very similar pipe to this one made of light clay found in Georgia is in the collection of the University of Pennsylvania.

An elaborate artistic pottery pipe belonging to the Steiner collection is on deposit in the U. S. National Museum. Fig. 231 from the Etowah Mound in Bartow County, Georgia, is in quite a fragmentary condition, as both bowl and stem are badly broken, yet sufficient remains to leave no doubt of its belonging to the type under discussion. The bowl is formed at the neck of a long-billed bird and is of the ordinary Indian pot form, excepting the prolongation of the upper rim when it reenforces the bird's beak; there are encircling the bowl two rows of square pyramidal facets, one above the other; the bird's eye is neatly incised, the curve of the head being distinct and the opening of the beak being represented by a straight line cut into the pottery, the whole having a pleasing individuality and representing an originality contrasting strongly with ordinary Indian art, though somewhat similar to pipes found in Cayuga County, New York.

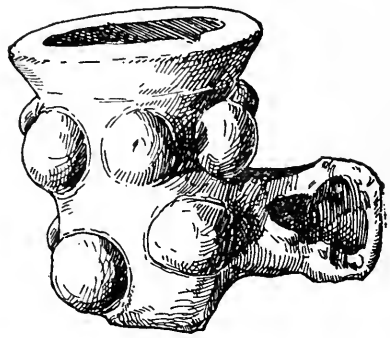

Fig. 227.

SOUTHERN MOUND PIPE.

Etowah Mound, Bartow County, Georgia.

Steiner collection. Deposited in U. S. National Museum.

Fig. 228.

SOUTHERN MOUND PIPE.

Bradley County, Tennessee.

Cat. No. 116341, U.S.N.M. Collected by J. P. Rogan.

Another specimen from the Etowah Mound in the Steiner collection (fig. 232) shows a different treatment of both the bowl and the bird's beak, the specimen being made of a light yellow pottery. The flaring sides of the rim of the bowl, as well as the whole form of the same, is strikingly similar to the vessels held clasped in the arms of human figures, a pottery specimen of which was found in this mound, and another in Tennessee. The beak here is opened, in which the bowl is modeled, the eye being smaller, though incised in a similar manner to that of the last figure; the band of the stem has more of a bead-like exterior than with any of the other pipes of this type.

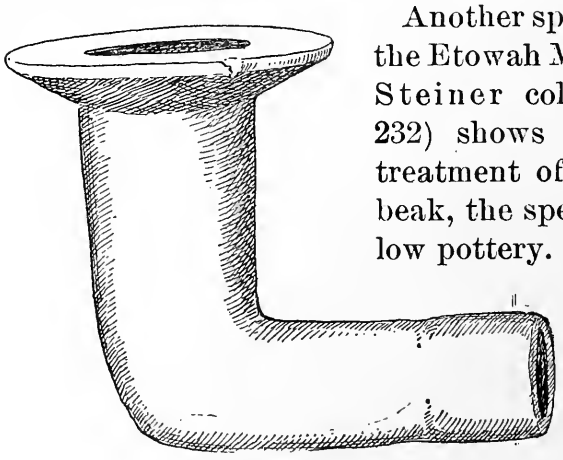

Fig. 229.

SOUTHERN MOUND PIPE.

Loudon County, Tennessee.

Cat. No. 6762, U.S.N.M. Collected by J. W. Emmert.

A typical pipe of this kind made also of pottery from Loudon County, Tennessee, collected by Mr. J. W. Emmert (fig. 233), shows the bird's

beak holding a plain bowl of the Indian form, the eye being represented by a rounded depression cut into the earthenware on either side of the head. Were it not for the other specimens figured, one might claim that the bird was not distinguishable as a definite ornamentation. A noticeable departure from the beak characteristics of this

Fig. 230.
SOUTHERN MOUND PIPE.
Etowah Mound, Bartow County, Georgia.
Steiner collection. Deposited in U. S. National Museum.

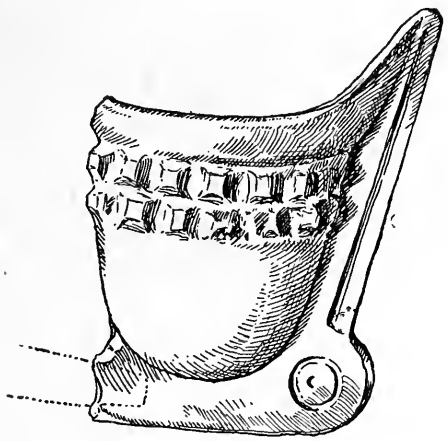

Fig. 231.
SOUTHERN MOUND PIPE.
Etowah Mound, Bartow County, Georgia.
Steiner collection. Deposited in U. S. National Museum.

type appears in an oblong depression at the base of the bowl under its stem where the pottery is cut out one-half the thickness of the same, and would be inexplicable were it not for a specimen from Camden County, Georgia. The only other treatment of the figures of clay pipes in any way approaching or resembling these birds with distended jaws, or with the closed beak, is in the pipe from Cayuga County, New York,

Fig. 232.
SOUTHERN MOUND PIPE.
Etowah Mound, Bartow County, Georgia.
Steiner collection. Deposited in U. S. National Museum.

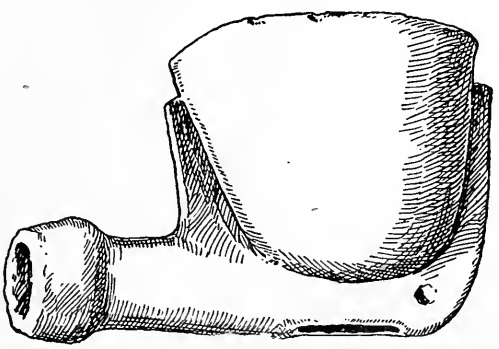

Fig. 233.
SOUTHERN MOUND PIPE.
Loudon County, Tennessee.
Cat. No. 6822, U.S.N.M. Collected by J. W. Emmert.

of the Iroquoian type, where the bird's beak extends far above the rim of the bowl, the bowl itself apparently being the pouch of the bird. While the treatment of the northern and the southern pipes is so dissimilar, there appears to the writer to be sufficient analogy to attribute a like artistic development to the persons making the one and the other.

Fig. 234 represents a pipe from Camden County, Georgia, collected by Mr. G. R. Floyd. It belongs also to the type we have been discussing, though it presents an entirely new art concept. The specimen is of pottery; the bowl with its flaring rim is severe in its simplicity, the band on the stem remaining constant through most of the specimens of the type, though even this rule has its exceptions, and the bird's beak has disappeared from the bowl, though it reappears in the depression in the base of the stem under the bowl, in which a pottery ball yet remains adhering as when first modeled, apparently establishing quite an interesting conventional treatment of the beak of a bird. There is another specimen of this type from Hardin's farm in Blount County, Tennessee, slightly larger than the pipe figured from the U. S. National Museum collection.

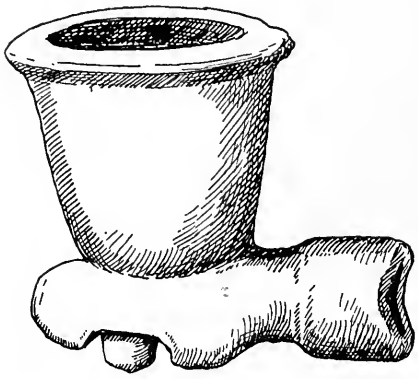

Fig. 234.
SOUTHERN MOUND PIPE.
Camden County, Georgia.
Cat. No. 10008, U.S.N.M. Collected by G. R. Floyd.

An extremely interesting specimen of this type of pipe is that represented in fig. 235, which was collected by Mr. Clarence B. Moore during the winter of 1897–98, in a mound on the Savannah River. It, like most pipes of this type, is made of clay. Opinions will probably differ as to the creature intended to be represented; looking at the side view, one could argue that a bird or frog was imitated, while regarding the face view, it looks like some indefinible monster. The type, however, is distinct, and the locality in which it was discovered is well within the geographical area of which pipes of this class are found. This specimen is the most elaborate and in many respects one of the most interesting pipes with which the writer is acquainted.

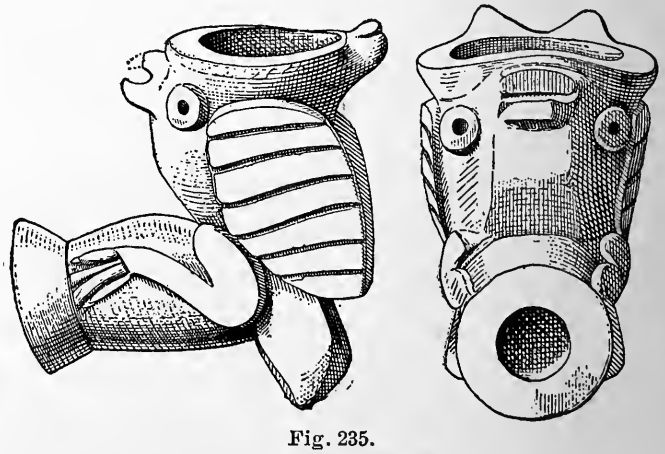

Fig. 235.
SOUTHERN MOUND PIPE.
Side and front view.
After Clarence B. Moore. Certain Aboriginal Mounds of the Savannah River, Georgia, p. 170.

Fig. 236, from Loudon County, Tennessee, collected by Mr. J. W. Emmert, is made of a red pottery, without apparent tempering, and shows a somewhat different character of ornamentation in two serrated ridges, one running up in front of the bowl and the other from the stem up to the rim, while two serrated rows of ornamentation encircle

the curved bowl, making a graceful whole. The bowls of pipes of this type vary from three-fourths of an inch to an inch in interior diameter, while the stem hole is ordinarily about three-eighths of an inch.

A pottery pipe from Nacooche, Georgia, collected by Mr. J. H. Nichols (fig. 237), is ornamented with cross furrows, leaving the whole surface of the bowl covered with low, rectangular pyramids, the short stem being left perfectly plain, whereas the band on the stem is higher than is commonly the case, being shouldered on the inner side and rounded off to the stem opening, its periphery being serrated. This serrated stem band and the pyramidal ornaments all appear to have been cut out of the pottery subsequent to its baking. Upon the rim of the bowl, with its back to the smoker, there is perched, gracefully, a dwarf-like bird form, the beak, eyes, ears, and tail of which are striking in their prominence; and while the resemblance in anatomical detail is but a caricature, one is forced almost to see an effort to shape a likeness to the little screech owl of our woods. As a whole, this pipe must be considered as highly specialized and exhibiting artistic merit.

Fig. 236.
SOUTHERN MOUND PIPE.
Loudon County, Tennessee.
Cat. No. 115958, U.S.N.M. Collected by J. W. Emmert.

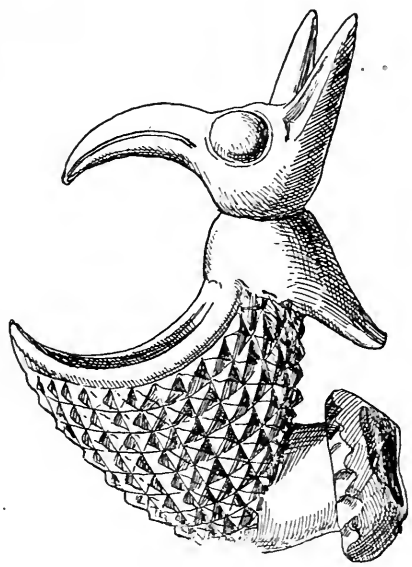

Fig. 237.
SOUTHERN MOUND PIPE.
Nacooche, Georgia.
Cat. No. 31569, U.S.N.M. Collected by J. H. Nichols.

Fig. 238 is a pipe found in the inclosure adjoining the Etowah Mound, and is made of a well-burned dark pottery. It is a most graceful pipe, decorated with six leaves, three on either side of the bowl, connected at their base to a stem, and evidently representing the tobacco plant, the stem of the plant forming the mold mark, showing undoubted European manufacture. The general principle involved in the technique of this pipe may yet be distinctly traced in pipes still made in Marseilles, France, and in Guda, Holland, upon the bases of which the tobacco leaves and bird's beak are grouped. These pipes show such artistic

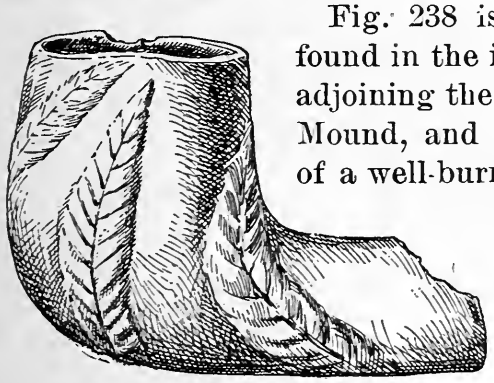

Fig. 238.
MOUND TYPE OF MOLDED POTTERY PIPE.
Etowah Mound, Georgia.
Steiner collection. Deposited in U. S. National Museum.

merit, and those of stone and pottery are so similar, the stone specimens often showing the file mark, as to impress one with the belief that the art concept of the whole series is that of the whites, even though it should be contended that the manipulation were that of Indians. The resemblance surviving among French and Dutch pipes of the present day would appear to indicate French origin rather than Dutch, especially when the treatment of the Cayuga clay pipes having bird beaks are compared with the Southern specimens. If this surmise be correct, then these pipes would appear to be contemporaneous with the early French settlements in the Carolinas.

The French family names of the Carolinas attest the nationality of its settlers in the colonial period. Twenty years prior to the advent of Raleigh, Laudonierre, in 1562, was sent by Admiral Coligny, under a patent of Charles IX, to make a settlement in America, Ribault having planted a colony of French at Port Royal Bay. These people were all massacred by the Spanish in 1565, though a few years later, in 1579, we find the French Huguenots and Walloons settling in the Dutch Republic.[1] Many of them settled in Acadia, and because of the edict of Nantes others settled in Carolina, and still others, after a short residence in Canada and New York, went south because of the climate being more like that of France.[2]

When Nova Scotia surrendered to the British after the treaty of Utrecht in 1763, many Acadians refused to take the oath of allegiance, and 1500 were at one time transported to Charleston, South Carolina.[3]

In the French colonies young women recruits were enrolled in France and came to people America,[4] just as the "redemptorists" were brought to America, and whose time was sold to reimburse the companies of shippers who imported them under contract to be paid back by their labor.

The earliest colonists "exported furs and peltries, much of which was procured from the Indians, which gave rise to a brisk trade between them and the settlers in the way of barter."[5]

Anthony Park, one of the first settlers of the back country, who then lived in the Newberry district (1758), traveled a few hundred miles among the Indians west of the Allegheny Mountains. He found several white men, chiefly Irish or Scotch, who said they had lived as much as twenty years among the Indians, a few from forty to fifty, and one sixty years, who must have taken up his residence 400 miles west of Charleston before the close of the seventeenth century,[6] and these are the people who would naturally introduce ornamental pipes among the natives as articles of trade, having no source of supply other than the country afforded.

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[1] Charles W. Biard, History of Huguenot Emigration to America, I, p. 151, New York.
[2] Idem, I, pp. 7, 9.
[3] David Ramsay, History of South Carolina, I, p. 15, Charleston, 1809.
[4] M. Bossu, Nouveaux Voyages aux Indes Occidentales, I, p. 23, Paris, 1768.
[5] David Ramsay, History of South Carolina, II, p. 233.
[6] Idem, I, p. 208, note.

Tobacco had a superstitious value, according to Dr. Everard, who in 1659 said: "The devil was much afraid of it, as I was informed by one born in England of Spanish parentage."[1]

Lawson, in his history of Carolina, says: "The women smoke tobacco; they have pipes whose heads are cut out of stone and will hold an ounce of tobacco and some much less."[2]

The writer has seen a clay pipe from Georgia, the bowl of which would readily hold an ounce of tobacco. That the Steiner pipes, which were found in and near the Etowah Mound, Georgia, and those found in the Lenoir burial place, North Carolina, as well as certain specimens found elsewhere in Georgia and Tennessee, whether made of stone or pottery, were made by the same people there does not appear reason to doubt. From their striking resemblance to each other they must have a common origin.

Gen. Gates P. Thruston, speaking of pipestems, says they are of uniform diameter, "for a closely-fitting reed or cane stem probably belongs to a type comparatively modern, as this appears to be the usual stem hole drilled by the historic Indians."[3]

Bartram, about 1773, who was well acquainted with the natives of the region we have been discussing, says: "As to mechanic arts or manufactures, they have scarcely anything worth observation. The men perform nothing except erecting their mean habitations, forming their canoes, stone pipes, etc."[4]

In 1737 Brickell said of the North Carolina Indians: "In general, they are great smokers of tobacco (in their language 'uppowoc'), which they tell us they had before the Europeans made any discoveries in that country, and although they are great smokers, yet they are never known to chew or make it into snuff, but will very freely take a pinch of snuff out of a European's box."[5]

The color of the chlorite of which many of these pipes are made indicates their form to be derived from copper originals. The embossed eyes are identical with what would be produced by hammering thin sheet copper, though there may have been and probably were wooden pipes of the different kinds which have been used in different parts of the continent.

Bartram describes the Cherokee smoking custom of a century ago in the Southern States. He says: "After partaking of this simple but healthy and liberal collation and the dishes cleared off, tobacco and pipes were brought and the chief, filling one of them, whose stem, about 4 feet long, was sheathed in a beautiful speckled snake's skin and adorned with feathers and strings of wampum, lights it and smokes a few whiffs, puffing the smoke first toward the sun, then to

[1] Dr. Everard, Panacea, or the Universal Medicine, Dedicatory, London, 1659.

[2] History of North Carolina, p. 56.

[3] Antiquities of Tennessee, p. 179, Cincinnati, 1890.

[4] William Bartram, Travels through North and South Carolina, Georgia, East and West Florida, p. 511, Dublin, 1793.

[5] John Brickell, The Natural History of North Carolina, p. 287, Dublin, 1737.

the four cardinal points, and lastly over my breast, hands it toward me, which I cheerfully received from him, and we fell into conversation."[1]

Brickell speaks of the heads of these pipes in 1737, which are generally cut out of stone, as being very large, "the shanks whereof are made of hollow cane."[2]

Fig. 239 is an extremely interesting pipe, 3½ inches long and 1¼ inches high, found among a number of bones in digging a well on the bluff at Baden, a northern suburb of St. Louis. With it, about 6 feet below the surface, were found a few arrowheads, indicating that it was an Indian grave. There is evidence in its make-up that shows a curious combination of savage and civilized ingenuity, resembling greatly the combination pipes of the northwest coast. The body of the specimen is composed of a close-grained hard wood, shaped to resemble a bird; the mouth is indicated by an incision on each side of the bill; to represent the eyes a stiff copper wire has been inserted through the head and smoothed even with the surface of the wood; on each side, probably indicating the bird's wings, there is a copper plate, held in position by rivets of the same metal; on the breast of the bird there is let into the wood a plate of copper, fastened by three rivets; the bowl of a typical English trade pipe has been sawed off at the base and inserted tightly into the bird's back and is connected with a stem drilled from the bird's tail, and had to be smoked with a separate stem. This pipe is now in the Douglass collection and has been illustrated by Dr. E. A. Barber.[3]

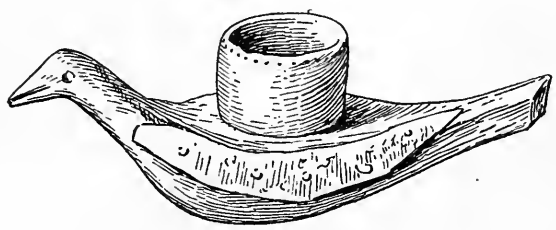

Fig. 239.

COMBINATION CLAY, COPPER, AND WOOD PIPE.

St. Louis, Missouri.

A. E. Douglass collection, New York City.

In a somewhat careful search for illustrations of early pipes the results have not been encouraging, one of the earliest writers to figure them being Neander, who, in 1626, illustrates five Persian pipes of forms different from those with which we in America are familiar.[4]

Though this is significant of the wonderful spread in a few years of the use of tobacco.

The Indian in his savage life may be considered peculiar in his offerings of tobacco to allay storms on the water, but was he different in his superstitions to nations of the Old World, where we find that the Roman, according to Gibbon, "deprecated the wrath of the Tiber," nor could he deride the Egyptian who presented his offering to the beneficent genius of the Nile?[5]

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[1] William Bartram, Travels through North and South Carolina, Georgia, East and West Florida, p. 349, Dublin, 1793.

[2] John Brickell, The Natural History of North Carolina, p. 287, Dublin, 1737.

[3] American Antiquarian, IV, p. 199.

[4] Johannum Neandrum, Tobacologia, Leyden, 1626.

[5] Edward Gibbon, History of Decline and Fall of the Roman Empire, I, p. 33, Philadelphia, 1804.

SUMMARY.

The rich collections in the U. S. National Museum of pipes of American aborigines, both ancient and modern, suggested this paper. These collections were made from the graves of the Indians, by contributions from public-spirited citizens anxious to preserve records of the natives and of their manners and customs, in addition to which modern specimens have been obtained by purchase from the natives themselves. As a consequence, the genuineness of these pipes may, it is believed, be relied upon. That data necessary to as perfect an understanding as possible should be obtained, specimens in other public museums and in private collections were, so far as possible, separately examined; and when this was not convenient, the desired information was obtained by correspondence. Few if any works have been written on the subject, yet many papers relating to it have been published in magazines and periodicals, and most works referring to early American travels have valuable references to the smoking customs or pipes of the natives. These have all, so far as possible, been consulted and referred to in the progress of the work, which has extended over a period of three years. The writer trusts that but few important references have been overlooked in the mass of literature consulted. It is hoped that the paper includes sufficient material for intelligent criticism of the correctness of opinions expressed, which at times are in conflict with accepted theories.

The subject was begun with no other view than to describe American pipes and smoking customs; the study of the subject has apparently developed information regarding manufacture of pipes, and consequently of other stone, bone, wood, metal, and pottery objects, that it is thought may be of interest in the general investigation of American archæology.

There has been undoubtedly a tendency to attribute great age to all American Indian grave finds, a view apparently contradictory to the results of careful inspection of many of the objects unearthed.

Smoke in some form, even that inhaled and exhaled through tubes, is shown to have been employed in Europe and in Asia from an antiquity long preceding the Christian era. In North America the smoking customs of the natives antedate the arrival of the whites on the continent, and from the similarity both of smoking customs and of the tubes employed in smoking in widely separated parts of the country, there is every indication that they must have prevailed for centuries.

In Europe, Asia, and America, up to a period probably as recent as the first half of the seventeenth century, the employment of smoke appears to have been chiefly, if not entirely, due to its supposed medicinal properties, added to which the Indians used it in their functions of every kind, attaching at times mysterious properties to the plants from which the smoke was produced. The offerings of incense by the Aztecs to the Spanish invaders under Cortez were in many instances similar to the familiar pipe customs of the Indian, and pipes of like

shape are traced from southern Mexico to the British possessions in the north.

From the first advent of the Spanish they appear to have adopted the habit of smoking from the natives, the reasons therefor being that it allayed hunger or fatigue in addition to many medicinal properties which it was said to possess. The French in turn, and for like reason, appear to have adopted its use, and finally the English took to smoking, the example being set by Sir Walter Raleigh, a favorite of the Court of Queen Elizabeth, who herself does not appear to have been averse to use of the weed upon certain occasions. The ravages of the plague during the first three-fourths of the seventeenth century appears to have been one of the chief causes of the rapid spread of the use of tobacco throughout the world, for in an incredibly short space of time the custom had traveled around the earth, again entering America by way of Asia on the west.

So far as appears to be now known, the North American natives at the time of the advent of the whites do not seem to have confined their smoking to the tobacco plant, nor do they do so even at the present day, but employed for that purpose sumac and willow, as well as many other plants, and at times insects and other ingredients, which were supposed to impart desirable odors, as, for example, gums in Mexico and the musk of the muskrat in Maine. There appears to be no evidence that native cultivation could have supplied any great quantity of herbs used in smoking prior to the advent of the whites. After the coming of Spanish, French, and English, cultivation of the tobacco plant probably had much to do with the spread of its use.

To the whites, who for a century or more used tobacco as a panacea for every ailment of the body, must be given the credit, if it be a credit, which many will doubt, of adopting the habit of smoking as a pastime. Owing to the tales of early travelers to America, the smoke of the tobacco plant was considered a specific for all diseases. In a short time the use of the plant came to be viewed as a vice. At first the medical faculty throughout Europe prescribed tobacco to be used in every imaginable way, at various times, from early morning to late night, on empty and on full stomachs, according to the fancy of the one prescribing it. It has been known as the "sacred herb," the "intoxicating plant," the "devil's oracle." Le Jeune in 1633 spoke of the natives using it as "unhappy infidels, who spend their life in smoke and their eternity in flames;" though Dr. Everard, about 1659, the author of a work on the subject entitled, "The panacea, or universal medicine," says: "The devil was much afraid of it, as I was informed by one born in England of Spanish parentage."

The derivation of the word tobacco does not appear to be certain. One of the earliest references to the word, that by Oviedo, referred rather to the pipe than to the plant. The illustration was not contained in the earliest edition of the work, and when it did appear, it

was a bifurcated implement through which smoke was taken by the nostrils, an implement probably used oftener in the nature of a snuffing tube. One of the chief objects of smoking by the natives throughout the Continent was to produce an intoxication, ecstasy, or delirium to the smoker. The names by which tobacco is known in all modern languages appears to be derived either from the American name, "tobacco," or from what appears to be a French or Brazilian name of the plant, "petun."

The profits in Maryland and Virginia on the growth of tobacco were so great during the early period of the English settlements in those colonies as to cause it to be grown to the exclusion of necessary vegetables, the natural result of which on more than one occasion brought about famine and consequent suffering.

The Spanish were the first to use tobacco, then the French, though up to the time of Raleigh's expedition it does not seem to have become a popular weed. After the return to England of the latter expedition, Thomas Hariot, who was a noted botanist and had been sent to America by Raleigh in 1585, reported tobacco as being a plant which preserved the bodies of the natives in health, and that they were not acquainted with many diseases with which the English were afflicted; certainly a powerful argument in favor of the use of a drug at a period when Europe was constantly being visited with Asiatic cholera, a pestilence greatly and deservedly dreaded owing to its ravages.

The use and abuse of tobacco became of such enormous proportions that both church and state felt called upon to curtail its use and cultivation by every means in their power from fear, apparently, that the injurious effects of the use of the plant might effect not only the bodies of the citizens but the revenues of the state as well. To the fathers of the church the use of tobacco appeared to savor of idolatry and its suppression was suggested. King James I wrote his famous "counterblaste to tobacco;" restrictive laws were passed concerning its use; enormous taxes were imposed upon its importation. Popes Urban VIII and Innocent IX issued decrees against its use and Sultan Amuret IV declared smoking a crime punishable with death. Beyond enhancing its value, no effect appears to have been had beyond increasing its use.

In time the value of tobacco was equal, weight for weight, with silver, and the size of the pipe diminished accordingly in Europe, and its effect was apparently felt in America as well.

The mixtures of other plants by the Indians with tobacco has been designated kinnikineck, though this term does not appear to be confined to any specific mixture; the word, however, is commonly employed by the Indians of a large portion of the Continent, and by whites as well.

Pipes, in which tobacco and other herbs have been smoked, are found scattered practically over the whole continent of North America, the

indications being that the custom of smoking prevailed as far north as the British possessions in the east and California in the west.

Pipes are made of an endless variety of substances, such as wood, bone, stone, antler, and metals, and combinations of such materials, though the majority of pipes are made of chlorite or steatite, minerals most suitable in every way for pipe manufacture. Specimens are quite commonly found made from most unsuitable materials, such, for example, as quartzite and bone. A single specimen made from stone coal occurs.

The different types of Indian pipes would appear to be as various as the material from which they were made, though practically all pipes may be classified as belonging to one or other of about a dozen forms, recognizable by the interior dimensions of the bowls and stems and their proportions one to the other. In given cases these proportions would naturally be governed by the supply of smoking materials or of suitable stuff from which to make proper stems. There are some exceptions to the rule, but they occur chiefly among the pipes of the northwest coast of the Continent, where style seems to be governed largely by the taste of the traveling public—the chief purchasers of these pipes. The same cause may be responsible for material, as is notably the case in walrus ivory pipes made and decorated by the Eskimo. The correctness of the classification is proven by the fact that pipes of similar type are found in contiguous areas with remarkable regularity.

One type of pipe alone is found to be common practically to the whole Continent, and this type, a straight tube, is in form the most primitive of any. Where perforated through stone they have been drilled by means of the most primitive drill known, namely, a straight shaft revolved between the palms of the hands or between the hand and the workman's thigh. So far as known to the writer there is scarcely an exception to this rule, the boring of these tubes being started from each end. Both stem and bowl are subsequently enlarged by gouging. On the Pacific coast stems of bone were inserted and held in place by means of bitumen. As the Atlantic coast pipes show many of identical shape, the presumption is that they also had similar stems held in place in like manner or with gum. Again, these tubular pipes are seldom decorated or finished with anything approaching a glass polish until there is found on them carvings in the round, due to modern ideas and methods of work and often the use of metal tools.

There are evidences in the earliest illustrations of the pipe that it was of tubular shape and smoked as one would smoke a straight tube; that is, by throwing back the head and holding the pipe perpendicularly. Again, the use of the tubular pipe in certain aboriginal ceremonies at the most solemn junctures would suggest its greater antiquity over other forms, especially when we find great veneration paid to the tube which is not given to other types of pipe. Certain tra-

ditions also point to the tube as being the most ancient pipe of certain tribes. There is found in the State of Ohio, however, a tube which must not be confounded with the pipes. It is of stone and carries a glass polish, having been bored by means of a tubular metal drill to within an eighth of an inch of a flat end, through the center of which a small hole had been bored into the tube. These tubes have great resonance, and are probably horns and quite modern in make.

On the surfaces of tubular pipes there are observed at times incisions rudely representing animal forms. They appear to be totemic, and the technique of these figures is from an artistic standpoint very inferior to the carvings in the round of later pipes of the tube type, so different, indeed, as to suggest an entirely distinct conception of art—the one purely aboriginal, the other apparently owing its existence not only to the tools, but also to the manipulation of the whites. The more elaborate tubular pipes are usually composed of such stones as chlorite and steatite, both admirably suited to resist the heat engendered in smoking. The great variety observable in the tubular pipes of wood from the Hupa Reservation suggests their being modern, and intended rather to supply tourists' demands than to comply with tribal conventionalisms. There are evidences that the tubular pipe was smoked with the aid of pellets of pottery, or of stone, intended to prevent the escape of tobacco into the smoker's mouth. These pipes, for the reasons given, are presumed to be the most archaic of any in shape, probably continuing with little change until after the whites had become established in the country.

A rectangular pottery pipe made of a glossy ware has been discovered among Mexican ruins, and might raise a question of age were it not that the ware itself is apparently modern, and some of the decorations on pipes of this character almost certainly are. While the pipe appears to belong to the northern part of the continent, records point to the cigarette and the cigar being of pre-Columbian origin in the West India Islands; the pipe being rarely if ever found below Yucatan.

The pipe next to that of tubular form most widely distributed is the bowl pipe, which consists merely of a bowl with a stem hole entering through the wall of the bowl, necessitating that whatever stem was used should be held in position by lashings of leather bound around stem and bowl while wet, which when dried by its contraction would hold stem and bowl together as though made of a single piece. This form, however, is also a modern one, and specimens are consequently often difficult of determination as to age. This type, however, like the tubular pipe, consists usually of stone specimens bored both bowl and stem by means of the solid drill point either of stone, or wood used with dry sand. The size of the stem hole is usually about one-third the diameter of that of the bowl. The exterior shapes of pipes of this type vary from the simplest cube to the most complex animal form, the exteriors at times being inlaid with metal or shell. It is in pipes of this

type that we first encounter basal perforations made for the purpose of attaching bowl to stem by thongs, thus making their loss in the snow less likely. This is an occurrence commonly noticeable in pipes of countries where the winter snows remain long on the ground. Pipes of this type are commonly found throughout the territory adjoining Lakes Ontario and Erie down through Ohio, Indiana, and Kentucky, and into Tennessee and North Carolina, and along the coast up to the British possessions. The territory through which they are found and their often graceful shape would suggest possible French influences.

Among the more elaborate specimens are many carved in imitation of animate figures, though the varied ornamentation encountered in pipes of this type leaves much to be desired in reference to their origin. It is almost certain that some of these pipes have been made with tools of metal, though if so it of course would not be evidence that other specimens were not made with the most primitive tools, which in a majority of instances appears to have been the case. The stems of the pipes were more elaborate if possible than were the bowls, and the significance of pipe-stem decoration was to a great extent decipherable by those familiar with their workmanship. Such decorations often were distinctly ideographic, the color and ornament of the pipe stems being at times significant of peace or war, though often it is known that the ornamentation was simply an evidence of woman's skill in beadwork, plaiting, or embroidery, or of the warrior's excellence in wood carving or combinations of color. The minuteness of description of stem ornamentation encountered in colonial writings, which usually only refer to the color of the pipe as being red, white, or black, is an argument in favor of the plainness of the primitive pipe bowl.

John Smith as early as 1608 speaks of pipes of a size sufficient to beat out the brains of a man, which subsequent authors increased to a size sufficient to beat out the brains of a horse. There is but one pipe of ponderous size which would answer the most extravagant of the above requirements. It is usually carved in imitation of birds or beasts and is the heaviest of all the American pipes. The skill exhibited in making these pipes is astonishing if they are to be attributed to aboriginal art, as many do who are most familiar with the type. Specimens of this variety have been excavated from 15 to 18 feet under the surface, though too much weight should not be given to this fact, as it is well known that the familiar English molded clay pipe of little over two hundred years ago has been repeatedly excavated in London at a depth of 12 or more feet below the surface, and from depths of from 6 to 10 feet in America. A close scrutiny of a number of these pipes fails to develop indications on their surfaces of the employment of the implements of the whites in their manufacture, though they are carved perfectly in the round, and are at times quite highly polished, both accomplishments suggesting white influences. The stone pipes of Indian origin of whatever type rarely show wear of the smokers' teeth

on the stem, even on those having wood stems the marks of teeth are not observable, though in these bird pipes the wear of teeth has been noted. Pipes of this type usually have the bird or beast facing from the smoker. Some of the features of these pipes suggest a close relationship with pipes of the tubular shape. The localities where this pipe is found are in the States of Kentucky, Tennessee, and the extreme western parts of West Virginia, North and South Carolina, and northern Georgia.

The English, French, and Dutch all molded clay pipes which were used in the Indian trade until they came to be known as "trading" or "trade pipes." It does not appear certain where these pipes were first made, whether in England, France, or Holland, archaic specimens having been found in each country. The typical Dutch type being represented in the U. S. National Museum in a specimen found in London and the no less typical English form in a specimen from Holland. French specimens of primitive English type are found having upon their stems stamps showing the lilies of France. An early so-called Roman type of clay pipe was found on the Susquehanna River. Specimens of these pipes have been found in Indian graves along the Atlantic seaboard. Early in the colonial period trade pipes were used as gifts to the Indians from the whites. At first they are mentioned in small numbers, but later they are referred to in treaties by the gross.

Another typical American pipe, though of foreign, probably English, origin, was the metal tomahawk pipe, with a pipe bowl upon one side and a hatchet blade upon the other. The date of this pipe is not certainly known, but it was probably before the time of the American Revolution. Specimens with a spear point have been attributed to the French and those with the rounded battle-ax blade probably belonged to the Spanish. The tribes confederated in the different wars with French and English, and Spanish have moved so far from their original homes as to make it a matter of considerable difficulty to properly locate the origin of the different forms of this pipe. Before leaving the subject of foreign-made pipes it is well to mention the fact that pipes of the trade type made of clay and of metal have been found in various parts of Europe, and they have been alleged to be of great antiquity, though the weight of authority appears to be against attributing to them an age prior to English settlements in America.

The monitor pipe, so called from its resemblance to the war vessel of that name, is found throughout the Atlantic seaboard from South Carolina to the British possessions and from the Atlantic coast, as far west as Kentucky and Tennessee, with rare specimens farther west, as in Michigan and Missouri. As many of these pipes show upon their surfaces file marks and a practical glass polish and from the drilling of their bowls by means of metal drills, one is inclined to attribute to them a post-European date, notwithstanding the fact that they clearly belong to a typical mound type. The bowls of these pipes often show evi-

dences of being enlarged after drilling by gouging with some implement. In contour many of these pipes are as graceful as any found on this Continent, their surface finish being almost perfect while the walls of stem and bowl are finished with a delicacy difficult to improve with any modern tools. These pipes are rarely ornamented with incised lines, and so far as the writer recalls, never have upon their surfaces carved figures.

A rectangular stone pipe, having a bowl at right angles to a long stem and having some creature crawling over the front of the bowl, was made of steatite by means of sawing the stone into shape and gouging the surface and finally completing the object with metal tools has been found along the seaboard, from Pennsylvania to Nova Scotia; and though attributed by many to a period antedating the whites, seems quite modern, and has upon its surface distinct file marks which could apparently only be made with the white man's file.

One of the most pronounced types of aboriginal American pipes would by many be said to be the familiar Micmac pipe, found as far south as Ohio and Kentucky and from the Atlantic north of the Great Lakes to the Pacific Ocean. This pipe is commonly so profusely ornamented and so often has its bowl bored by means of a tubular metal drill and is so uniformly finished with a file as to leave little doubt of its being made with modern metal tools. These pipes with their keel-like bases bored with from one to six holes for the purposes of attaching tassels and strings to prevent loss in the snow, are usually of most symmetrical shape. This pipe is still made in Labrador, and specimens are known that are finished with totemic figures upon their bowls, carved with a skill and with characters that could scarcely be claimed to be Indian.

The disk pipe, usually found in the States of Illinois, Missouri, and Kentucky, with specimens from Ontario, are of mound type, though their outline is so similar to the jews'-harp as to raise suspicion that such an instrument furnished the model for the type. The jew's-harp was a common article of barter with the natives, and on many occasions is mentioned among presents given at some treaty made at a council meeting between the whites and Indians. Specimens of this type made of catlinite would also suggest a modern period for the origin of the type, for there is doubt whether catlinite was ever traded so far from the quarries until subsequent to the advent of the French.

The Iroquoian pipes found along the river St. Lawrence and in the neighborhood of the Great Lakes may be said to vary one from the other more than pipes found in the eastern United States. First they were curved clay pipes having bowl and stem in one; then pipes made of a stalagma, the straight stems of which are at right angles almost with the bowls, and finally stone pipes of the bowl type for separate stems of wood. All three of these pipes are found in the area of influence of the Iroquoian confederacy and with scarcely an excep-

tion presenting peculiarities of workmanship which render them readily distinguishable. These pipes with but slight doubt show that their period is subsequent to the arrival of the French. The curved clay pipes are usually of a hard burned pottery with fine tempering material, molded in artistic forms, and at times the pottery itself appears to be cut subsequent to burning. The shapes of these pipes suggest the hunting horn, the grenadier's hat, sacred pictures, etc. The grenadier type is retained in the pipes of stalagma. In the bowl type there appears to be a suggestion in several specimens of the jumping jack. In all three are peculiar depressions upon the surfaces of specimens suggesting the possibility of their being intended for inlaying. There are so many European characteristics in pipes of the Iroquoian type as to leave scarcely a doubt of their deriving their forms entirely from the French. The art concepts present both the serious and grotesque in a manner more suggestive of the French than of native American ideas.

The word "calumet," a synonym for the peace pipe, is said to be derived from the Norman word "chalumeau," a reed. The same word is corrupted as "chalmy," a musical instrument of the time of Queen Elizabeth. Calumet originally was employed to designate that pipe, of whatsoever type, used between the whites and the Indians in their negotiations of treaties and of commerce of every kind. The word calumet, at present, however, may be said to indicate that pipe which was probably the one given to the Jesuit Father Marquette in his first trip down the Mississippi, namely, the red Siouan catlinite pipe, the stone being a vermilion-colored indurated clay, quarried in the State of Minnesota. The Siouan pipe has a high bowl, always rising at right angles to the stem, and has a long projection or prow on the opposite side of the bowl from the stem. In the older specimens bowl and stem holes are approximately of the same size, about one-third of an inch in diameter. The earlier specimens are smoothed and unornamented, while the later ones are highly polished, and often inlaid with plates of lead, and at times even have duplicate bowls. This type was originally used by the French as a flag of truce, because accepted in Marquette's trip down the Mississippi by affiliated tribes, who by its decorations and type probably recognized it as coming from friends; but it appears even on that occasion to have been ignored by Indians visited on the lower part of the river.

The English were probably the first to use as a flag of truce the collar or belt of wampum, just as the French did the pipe. Later, because of the want of a written language, both pipe and wampum belt seem to have been commonly employed as a reminder of agreements entered into between the whites and natives, a species of temporary ideograph, which after having answered the full purpose of one treaty or contract could later be used for another. The decorations of pipe and belt appear to have been considered in sections or chapters, as it were,

between each of which presents were usually exchanged when a treaty was in progress of negotiation. This ideograph was used when treaties were made with the Indians, who were accompanied by a regular delegation, whose duty it seems to have been to see that the chapters or stations of the belt or pipe were properly repeated by its bearer and to interrupt his speech whenever not correctly repeated as agreed upon by the tribe. The individual pipe was often employed as a pledge, which when deposited must always be redeemed according to the strict letter of the agreement. The commonly accepted theory of the great sanctity of the pipe of peace as a protection to those accompanying it does not historically appear to have been well founded.

The calumet dance of the Indians seems to have been widespread through the continent, so far as may be judged by the meager references we have to it. It was a function of some religious or mystic character, extensive presents being given upon the occasion, the individual danced to or for being considered thereafter to be an adopted child of the dancer. The flag of the United States, after the cession of Louisiana, was used in place of the French pipe in the acquired territory. Such agreements were later evidenced further on the part of the United States by the presentation of medals bearing the head of the then President or "Great Father," as he was called by the Indians. The red color, designating war, and the white, peace, was possibly suggested by the colors respectively of French and English flags.

The typical, elaborate, and artistic curved-base mound pipes, found to be contemporaneous with copper implements, are drilled by means of tubular and solid drills, almost necessarily made of metal. In certain instances the shapes of bowl cavities are of an irregular form, indicative of the use of a loose drill head; which supposition, if correct, would suggest the use of either a pump or strap drill, probably the former, either of which implements appears to have been unknown to the natives prior to the advent of the whites. The polishing of this type of pipe is so perfect as to raise a suspicion of white influences. The common observance on pipes of this type of marks which seem to be those of the file suggests white man's tools in fashioning them. The fine lines cut on many of these pipes would indicate the possible use of steel tools; inlaid eyes suggest modern methods. Carving in the round as perfectly as is done in pipes of this type also implies modern influences and the presence of the white man, as do objects of copper covered with silver found in contact with these pipes. Besides this, the knowledge of the existence of the elephant and the finding in the mounds articles of undoubted European origin are all suggestive of the comparative modern date of pipes of the curved-base mound type. It does not of necessity follow that these pipes were of foreign manufacture, but probably they were the handiwork of fur traders and hunters catering to native trade demands. The figures on these pipes are doubtless of totemic significance, and, with few exceptions, face the

smoker; and where an exception is noted, it is commonly observed that the stems on the front end have been broken. The figures beyond, being of men, beasts, birds, and reptiles, are seldom of determinable species. The finding of pipes of this type made of catlinite is indicative of modern influences, though by no means proof of it. The area of distribution of this type conforms to the route of the early French voyageur and of the missionary.

The double conoidal pipes commonly found along the Lower Mississippi and in the southern United States generally have large bowls and stems bored at right angles one to the other, the openings of which are an inch or more in diameter. They are almost always of stone, and are bored by means of a solid drill, though pottery specimens are known. These pipes vary enormously in exterior shape, all the way from the unornamented cube to the most elaborate animal form. Upon the bases of pipes of this type, which invariably face from the smoker and are often made of a gritty sandstone, are commonly noticed deep grooves, apparently made for the purpose of sharpening some tool, though what, it is impossible to say. The frog is a form commonly encountered in pipes of this type, though animal figures are often found; where in imitation of men, they are usually in crouching positions.

A most elaborate type of pipe, which has been designated as the "idol pipe," and found in the mounds and stone graves of Georgia, Tennessee, and Arkansas, has some features suggesting a kinship with pipes from the Etowah Mound, Georgia; but while these pipes appear to belong to a distinct type, too few of them are known to justify any definite opinion concerning them.

During the colonial period there are often encountered references to "great pipes," which appear to have been pipes of large proportions compared with those of the usual type, and were the property of the tribe rather than of the clan or of the individual. Some few specimens of these pipes are known, which seem to have been made by the whites, of whose manufacture of pipes of this type one or more records are preserved. The Northwest Fur Company are said to have traded stone pipes with the Indians in exchange for furs; and John Smith, in Virginia, is known about 1608 to have asked permission of Powhatan to go through his territory to obtain stone for making axes, and the presumption forces itself upon one that the trade and manufacture of stone implements has been greater than is generally supposed.

The natives certainly of a part of the far Northwest appear to have seen the first white people during the present century and to have first learned from them the smoking habit. Pipes of the Northwest coast are for the most part comparatively modern and made for sale, and consequently their shapes are as varied as the materials from which they are manufactured. The natives of Queen Charlottes Islands carve with metal tools most elaborate pipes from a blue slate, with most artistic and typical figures, though the pipes of this material are so

diverse that little study has been given them, nor has reference been made particularly to the walrus-ivory etched pipes made for sale to the tourist and not for practical use.

The Eskimo pipe in type appears to have derived its form from the Japanese pipe and to have been introduced from Japan, from whose people the Eskimo seem to have adopted the smoking habit, or else this pipe may have been introduced from Kamchatka, whose people may have adopted smoking from the Japanese.

The modern Pueblo pipe is of a distinct type, resembling both in the character of its pottery and in the size of its stem opening the Iroquoian pipe.

The form called the Delaware pipe appears to be of totemic character, is carved with considerable skill, and impresses one as being of recent origin and made with modern metal tools.

Along a great part of the Atlantic coast a class of pipes is found usually made of chlorite and worked with exquisite skill. Their long stems, bored with holes often 8 or even more inches in length, indicate that those using them were rather of sedentary than of nomadic character. This perfection of boring would also suggest rather a metal than a more primitive drill. A pipe of this character is at times encountered in the shell heaps of the Middle Atlantic coast, upon which characteristic linear Indian etching is observed.

There are found in graves and mounds in the Carolinas, in Georgia, and in Tennessee pipes of somewhat like character made of a green chlorite with embossed disks upon their bowls, and tongues both in relief and in intaglio, that show as great conventionality as any pipes found in America, and which would indicate in color and design hammered-metal prototypes. Specimens presenting similar characteristics are found made of pottery. These last, again, grade into elaborate and highly conventionalized pottery man and bird forms, which present certain art characteristics observed in pipes found in part of the Iroquoian area of the North, though there is sufficient distinctness between the two to enable one to be distinguished from the other. A single molded pottery pipe found in or near the Etowah mound has the tobacco leaf artistically arranged on bowl and stem, and a modern Dutch pipe from Guda, Holland, has the same tobacco leaves, with the addition of a bird's beak, identical in concept with pipes from the Etowah mound, evidencing a relationship which appears traceable through the Huguenots who went to Holland, migrated to French Acadia, and who, after the acquisition of the territory by the English, refused to take the oath of allegiance and were in great numbers transported to the South.

Specimens of catlinite made in tubular shape do not appear to have been found, and where specimens of other types than the Siouan, in whose territory the quarry is located, are found made of catlinite, it tends to raise the question whether they are not comparatively mod-

ern. While the indurated clays and metamorphic stones generally work well by pecking with the stone hammer or point, catlinite, which there are indications was in the primitive period worked by pecking, is at the present time worked by sawing, which is readily done with metal and sand. The drilling of this stone is comparatively simple with a stick and dry sand, which, however, if wet, would pack in the perforation besides swelling the wood point if one were used. Drilling in curves like the supposed evidences of hardening of copper by the ancients is a myth, and no evidence is known of its ever having been done by primitive people through any mass of uniform hardness.

While, as a matter of course, it is possible to make pipes and pass them off as genuine and thus to deceive even experts, it is believed that such a thing could not be successfully accomplished except in rare instances, and the writer has been surprised that in the mass of pipes that have been examined by him so few show any evidence of being frauds. On the other hand, the evidences of the use of the white man's tools as well as art ideas are on so many types of pipes as to convey the distinct impression of early colonial legitimate trade in stone objects. That totemic figures better enhance values is self-evident. Is it to be assumed, then, that the voyageur, trapper, or hunter would not with his knife or file make pipes to supply such demand. It must also be remembered that carving during the early colonial period was a much more prevalent accomplishment than at present.

It has been observed that quite a number of pipes have been referred to upon which dates are scratched or cut, and while such specimens will always be scrutinized with suspicion, the dates in the majority of instances, it is contended, should be accepted as accurate, not necessarily of the period of their manufacture, but rather of their first possession by the white man.

As the data upon which the foregoing conclusions are based are embodied almost completely in the foregoing pages, students of the subject will, it is hoped, be enabled to judge of their correctness.

ADDITIONAL NOTES.

During the preparation of this paper some notes were mislaid, others were laid aside and not found until the paper was in the printer's hands, and still others have come more recently to the writer's notice, making together quite a number of references, some of which throw additional light on the question under discussion, and it has consequently been considered desirable to embody them as succinctly as possible in a brief series of additional notes.

McCulloh, in the account of his captivity by the Indians, in Loudon's exceedingly rare work, refers to a peculiar method of burial employed by the natives about 1756, which would appear very similar to the burial method of the people of the stone graves in Kentucky and Tennessee. He says: "They dig the grave about 4 or 5 feet deep,

directly east and west; they make slabs which they place in the bottom and at each side, then lay the corpse with the head to the east and put a broad slab over the top; then fill the grave nearly full of stones, heaping the earth which they dug out of it on the top."[1]

The Indians encountered by the French were probably all nomads or wanderers, seldom remaining more than a few weeks in one place. It was said in Le Jeune's Relation, as late as 1634, "that we shall work a great deal and advance very little if we don't make these barbarians stationary. As for persuading them to till the soil of their own accord without being helped, I very much doubt whether we shall be able to attain this for a very long time, for they know nothing whatever about it."[2]

A reference of 1636 in Le Jeune's Relation to the head covering is of some interest as possibly throwing light on the period of certain pipes representing natives' hats or hoods, as follows: "These people go bareheaded except in the most severe cold, and even then some of them go uncovered, which makes me think that very few of them used hats before their intercourse with our Europeans. Nor do they know how to make them, buying them already made, or at least cut, from our French people."[3]

Mr. David Boyle, of Toronto, has referred to a brass tomahawk pipe in the George E. Laidlaw collection, on deposit in the Ontario Archæological Museum, which is "elaborately chased and otherwise decorated." The bit is of steel neatly dovetailed into the brass, but not soldered.[4]

The illustration of this specimen is of the type of fig. 85, the chasing being of the character of that on the specimen in the museum of the University of Pennsylvania from California, and its symmetry is as perfect as any of the pipe axes of the English. It was found near Balsam Lake.

McCulloh refers to an Indian of western Pennsylvania about 1756, named Ket-tooh'ha-lend, who "sunk his pipe-tomahawk" into the head of another.[5] This would probably be the metal tomahawk, which would make it somewhat an older instrument than the writer had heretofore found references to support.

Mr. Boyle has recently described a number of pipes, both of pottery and of stone, that are now in the Ontario Archæological Museum, belonging to the Iroquoian type. Some of the pottery specimens

[1] Archibald Loudon, A Selection of the Most Interesting Narratives of Outrages Committed by the Indians in their Wars with the White People, I, p. 350, Carlisle, 1808.

[2] Le Jeune's Relation, Jesuit Relations and Allied Documents, edited by Reuben Gold Thwaite, VI, p. 149.

[3] Idem, VII, p. 11.

[4] Tenth Annual Report of the Ontario Archæological Museum, 1897–1898, p. 31, fig. 40, Toronto, 1898.

[5] Archibald Loudon, Narratives of Outrages, etc., I, p. 329.

illustrated have double faces on their bowls, one facing toward and and the other facing from the smoker, from Bexley Township, Ontario.[1] Other of these illustrations would indicate masks. Mr. Boyle in his publications demonstrates the great diversity of exterior form of the Ontario pipe. The bowls and stem openings of the pottery specimens remain of type character, though a single one appears to have been enlarged for the reception of an artificial stem.

Parkman's says that the Jesuits were reported to have carried on trade through the savages for furs,[2] this primitive intercourse of a commercial character would have been a most effective method for opening the road to the missionaries through the territory of the savages, which once opened would afford opportunity for the spread of the doctrines of the church.

The term "tabagie" or "tabagio," at times occurring in early French publications, is evidently derived from the word "tobacco" and has its origin in the smoking habit. Marc Lescarbot, in referring to a victory of the French and their Algonquin allies on July 29, 1609, over their Iroquoian enemies, speaks of it as a triumph which they celebrated with great festivities, consisting of continual tabagie, dances and chants, according to their custom.[3]

A reference by Biard about 1632, that "the savage made tabagie for them all with moose meat,"[4] would indicate that the term at this period had come to signify a feast, as it appears later to have become corrupted into "tapage", a row or noise.

Father Pierre Biard, referring to demands of the Indians for tobacco in 1611, says the king should present him 4 or 5 pounds of bread, 3 of peas or beans, 1 of tobacco, 4 or 5 cloaks worth 100 sous each, bows, arrows, harpoons, and other similar articles.[5]

As akin to customs existing in other parts of the country, reference is made in 1616, in Acadia, to the fact that, if the dying man has some supplies on hand, he must make tabagie of them for all his relations and friends.[6]

Biard, in 1616, further says: "They also use tobacco and inhale the smoke, as is done in France. This is without doubt a help to them, and upon the whole rather necessary, considering the extremes of cold and bad weather, and of hunger and of overeating and satiety which

[1] Tenth Annual Report of the Ontario Archæological Museum, 1897–1898, p. 17, fig. 7, Toronto, 1898.

[2] Francis Parkman's Works, p. 38, Boston, 1895.

[3] Marc Lescarbot, The Conversion of the Savages, Jesuit Relations and Allied Documents, I, p. 107, Cleveland, 1896.

[4] Father Pierre Biard, Relation de la Nouvelle France, Jesuit Relations and Allied Documents, V, p. 27.

[5] Letter to the General of the Society of Jesus, Jesuit Relations and Allied Documents, I, p. 177, Cleveland, 1896.

[6] Father Pierre Biard, Relation de la Nouvelle France, Jesuit Relations and Allied Documents, III, p. 127, Cleveland, 1896.

they endure. But many ills also arise from it on account of its excessive use. It is the sole delight of these people when they have some of it, and certain Frenchmen are also so bewitched with it that to inhale its fumes they would sell their shirts. All their talks, treaties, welcomes, and endearments are made under the fumes of tobacco. They gather around the fire, chatting and passing the pipe from hand to hand, enjoying themselves in this way for several hours, such is their inclination and custom."[1]

The area of French influence was continually widening as those wanderers, the coureurs du bois, went farther and farther into the wilderness in search of skins, until La Salle, in 1670, appears to have arrived at the falls of the Ohio, where he was deserted by his people and was forced to return.

Tobacco, according to Peter Heylyn, about 1682, was called the "Henbane of Peru," quoting "Gerard and some other of our modern herbalists," but he says, "Tobacco is by few now taken as a medicine, and it is of late times grown a good fellow, and fallen from a physician to a complaint. The taking of tobacco was first brought into England by the mariners of Sir Francis Drake in 1585, and it happened not unfittingly in the way of an antidote to that immoderate use of drinking which our low country soldiers had brought out of the Netherlands much about that time."[2]

If we can believe Jouvency, the moose would appear to have taken the place of tobacco as a universal medicine and remedy, for he says of it, about 1710, "The savages eat its flesh, are clothed with its skin, and are cured by the hoof of its left hind leg." He also says, "It avails against epilepsy, nor does it have less power with the cure of pleurisy and six hundred other diseases."[3]

As a suggestion probably throwing some light on the shape of those pipes resembling the human arm, that of Le Jeune referring to the Indians of Canada is of interest. He says: "Nearly all the savages have a little castipitagan, or tobacco pouch, made of the skin of the muskrat. Some of them carry a part of an arm or a hand of a hiroquois whom they have slain, which is so skillfully prepared that the nails remain entire. You would really think it was a solid hand when they fill it with tobacco or something else. I have not seen any of these, but am assured that it is so."[4]

According to Baron de Bonstetten, "In China, in India, in Persia they have smoked from time immemorial the grain of hemp, like the Scythians of Herodotus. In Ceylon, Java, Siam, Japan, Cochin China,

[1] Father Pierre Biard, Relation de la Nouvelle France, Jesuit Relations and Allied Documents, III, p. 117, Cleveland, 1896.

[2] Cosmography, Chiography, and History of the Whole World, p. 125, London, 1682.

[3] Joseph Jouvency, Country and Manners of the Canadians, Jesuit Relations and Allied Documents, I, p. 249.

[4] Le Jeune's Relation, Jesuit Relations and Allied Documents, V, p. 131, edited by Reuben Gold Thwaite.

and China it is opium which is especially in favor and proves the antiquity of the habit.

The Portuguese, Odoardo Barbosa, in the account of his voyages, 1519, says that at that time the Chinese bought opium in India.

Nanah, the prophet of the Sikhs, born in 1419, defends in his decrees the use of the pipe among the Sikhs, but found the practice so noted among the Hindoos that he made an exception in their favor.

In the beginning of the seventeenth century a series of edicts were published in Turkey against smokers, and in Constantinople everyone found by the police smoking a pipe in the streets was handed over to the executioner.

Marco Paulo makes no reference in the middle of the thirteenth century to the pipe and to the smoking habit."[1]

Bonstetten also says:

"The Buriats; inhabitants of the banks of the Baikal, mix the bark of pine with tobacco.

"The Karaks of Tassceva offer pinches of tobacco to the rivers and mountains; like them the Ostiaks bury a pipe with the dead."[2]

Navarette, referring to Columbus's messengers who were sent ashore, says: "The two Christians found on their journey many people returning to their villages, and both men and women carried in their hands a lighted coal and herbs for perfuming themselves, as is their habit."[3]

Yet it will be remembered that another author has referred to this same occurrence in a somewhat different manner.

Columbus describes the religious ceremony of placing a platter containing cohabba on the head of the idol, the worshippers then snuffing up the powder through a cane with two branches.[4]

E. R. Billings says Oviedo describes the bifurcated implement "as about a span long."[5] This implement as a snuffing tube has been fully discussed by Dr. Max Uhle in his paper, referred to earlier in this work, in which he shows that somewhat similar implements have been employed in various parts of Central and South America.

A tube, though employed for an entirely different purpose, is described by Eivind Astrup as in use by the natives of Cape York. He says: "At the side of the lump of meat stood also a huge block of ice as clear as crystal, whence the community obtained water, as in the center of it a cavity had been cut, at the bottom of which a stone was placed of the size of a man's fist, on which there burned with a good flame a piece of moss intersected with blubber; and as the ice melted at the sides of the cavity, the water collected at the bottom in

[1] Baron de Bonstetten, Recueil d'Antiquitées Suisses, Pt. 3, p. 14, Berne and Paris, 1855.

[2] Idem, p. 14.

[3] M. F. De Navarette, Relation des Quatres Voyages de Christophe Colomb, II, p. 167, Paris, 1828.

[4] Condamine's Travels in Pinkerton's Voyages and Travels, XIV, p. 226.

[5] Tobacco, its History, etc., p. 33, Hartford, 1875.

a small clear pool, whence it was consumed by the many parched mouths by sucking it up through hollow reindeer marrowbones, in exactly the same manner in which we enjoy a sherry cobbler through a straw."[1]

Dr. Barber says: "The Pah Utes, according to Mr. Edward Palmer, use the leaves of *Arctostaphylos tomentosa*, the Manzanita of the Spanish, for tobacco and also as a medicine."

Mr. A. E. Douglass has in his collection a very remarkable brown stone pipe, belonging to the biconical type in the form of a human head. It was found it is said about 100 feet from a small rock mound near Coolville, Athens County, Ohio. The mouth, apparently the bowl, shows that it has been bored out by means of a tubular drill as there is a protuberance at the bottom. The ears are carved to give the impression of having in them the familiar copper discoidal spools at times found in Ohio. The specimen presents every appearance of genuineness and some of its features are unique. It has been badly battered by children who have played with it.

Prince Maximilian, of Wied, refers to some of the Indians of Indiana who smoked sumac leaves in wooden pipes. "The Cherokees also of the Southern States used wooden pipes carved in the form of bears, the bowl being in the back and the tube orifice near the tail."[2]

The pipe here described might be the biconoidal pipes referred to, or possibly it might refer to a pipe illustrated by Schoolcraft and now in the museum of the University of Pennsylvania. This pipe is cut through a block of chlorite, which exteriorly is of a rude animal shape, the legs being represented in low relief, as seen in fig. 157. The eye is cut into the stone. The stem opening of this pipe and the bowl, which were from Camden, South Carolina, are almost in the same plane and would entitle it to be classed rather with the tubular pipes than with another form. The surface of this pipe is black and glossy, and it would appear entitled to be classed among unique specimens, the form being apparently given by means of the hammer stone by pecking.

Holm quotes P. Lindstrom, about 1650, who he says writes as follows: "Their money is of shells, white, black, and red, and worked into beads and neatly turned and smoothed. One person, however, can not make more in a day than the value of six or eight stivers. When those beads are worn out so that they can not be strung neatly and evenly on the thread, they no longer consider them as good. Their way of trying them is to rub the whole thread full on their noses, and if they find it slides smooth and even, like glass beads, then they are considered good. Otherwise, they break and throw them away. Their manner of measuring the length of their strings is by their

[1] Eivind Astrup, In the Land of the northernmost Eskimo, from Fortnightly Review, Littell's Living Age, No. 2701, p. 112.

[2] Travels in the Interior of North America, London, 1843, translated from German by Lloyd.

thumbs. From the end of the nail to the first joint makes six beads, of which the white ones are worth a stiver or piece of copper money, but the black or blue ones are worth two stivers or a piece of silver."[1] He says these beads are cut of brown or white cockle, muscle, or oyster shells.[2]

According to Georg Heinrich Loskiel the belts of wampum were regulated in size according to the importance of the subject intended to be discussed on the part of whites or Indians, and before they used the string or belt of wampum the wing of a large bird was used in its place. The belts and strings, he says, are employed to speak from and to remind one of business transactions. This is still used, he says, by those living west.[3]

The Swedes settled on the banks of the Delaware under Capt. David Pietersen De Vries in 1631, where he arrived with two ships. "He returned again in 1632 and found the fields of his new colony strewed with the bones of his countrymen. The arms of Holland, emblazoned upon a piece of glittering tin, had been elevated upon a pillar. An Indian stole it to make a tobacco box. The commandant took offense; they quarreled; and the colonists were all butchered while at work in the field."[4]

A broken specimen of a pipe of the heavy animal and bird type (fig. 65), which is 4½ inches high and made of steatite, collected by Dr. J. H. Elder about 3 miles from Watkinsville, Georgia, the bowl of which is 2½ inches above the back of a bird, is an interesting specimen of the type, in that incised lines are cut into the stone to represent conventional wings of some bird, as we may distinguish by later specimens in which the wings are represented by being carved in a low relief. The head of the bird is represented also by incisions and, were it not for the conventionalized wings, might as well be taken for that of a turtle. Upon the side of the bowl a word or name, apparently Canonic or Ganonic, is incised, and under it the date 1541. The lines of the name appear as old as the incised lines, though the date is evidently recent. This pipe is apparently an old specimen of the type.

A finely ground specimen of serpentine, belonging to the type of which fig. 108 is an example, collected by Mrs. Reeves of Sun Prairie, Wisconsin, has been called to the writer's attention by Prof. W. H. Holmes. The prong at the base has the unusual length of 4 inches from the point to the bottom of the bowl. The stem and bowl appear similar to the illustration, the hole of the stem being about one-eighth of an inch in diameter. There is scarcely sufficient bowl remaining to determine more than that its cavity has been made by means of a

[1] Thomas Campanius Holm, A Short Description of the Province of New Sweden, now called by the English Pennsylvania, p. 132, translation, Philadelphia, 1834.

[2] Idem, p. 133.

[3] Geschichte der Evangelischen Brüder in Nordamerika, Barby, 1789.

[4] Sherman Day, Historical Collections of the State of Pennsylvania, p. 9.

solid drill point. Pipes of this character appear to belong to a distinct type when it is considered over how extensive a territory specimens have been found, reaching from Tennessee to Wisconsin. The type has every indication of being modern.

A photograph in the U. S. National Museum of a bird pipe of the type of fig. 121, collected by Maj. W. B. Camp, from Sacketts Harbor, New York, has a hole bored from side to side of the knob representing the feet. The pipe is smoothly ground and apparently made of indurated clay.

The natives of western Pennsylvania about 1760 are said according to Loudon to have made "burnt offerings to their deceased relatives, such as tobacco, bread," etc.[1]

As did the natives of Virginia at the advent of the whites, and in this exceedingly rare work, it is related that Tecaughretanego, after building himself a sweat house and purifying himself therein, came out and began to pray and cast the last of his cherished tobacco into the fire; he then is said to have handed his white companion his pipe to smoke, though at that time he had nothing to smoke but red willow bark.[2]

The mixture of other plants with tobacco is here also noted and the friendly smoking referred to. "They are," it is said, "very fond of tobacco and the men almost all smoke it mixed with sumac leaves or red willow bark pulverized," and these Indians are said seldom to use it any other way.[3]

The conjurer's or medicine man's practices appear identical with those in other parts of the continent, as related in McCulloh's Narrative, contained in this work, in which the scene is described of a woman who places her hands one over the other upon a boil and sucking the hand and pretending to hand something from the mouth to the medicine man, who stepped out of the hut. A few days later he returns and smokes "qush-a-tik ok kil-lick ken-eek can;" that is, tobacco and mixture such as sumac leaves, red sally bark."[4]

Kalm refers to the wampum about 1749. He says: "Many people at Albany make the wampum of the Indians, which is their ornament and their money, by grinding some kind of shells and muscles. This is a considerable profit to the inhabitants."[5]

Soon after the landing of the Pilgrims at Plymouth, in December, 1620, namely, March 16, 1621, "Samoset came boldly among them and spoke to them in broken English, which yet they could understand, at which they marveled, but at length they understood that he belonged to the eastern parts of the country, and had acquaintance with sundry

[1] Archibald Loudon, A Selection of the Most Interesting Narratives of Outrages Committed by the Indians in their Wars with the White People, I, p. 341, Carlisle, 1808.

[2] Idem, I, p. 237.

[3] Idem, I, p. 276.

[4] Idem, I, p. 354.

[5] Peter Kalm, Travels into North America, II, p. 261, London, 1771.

of the English fishermen, and could name certain of them from whom he learned his language."[1] This occurrence is only an additional instance of almost every account of the traveler's first contact with the natives—that some one else of the same color or nationality was there, or had been there before them.

It is noteworthy that all references to the personal property of our American Indians indicate that it was inconsiderable. Peter Heylyn, about 1682, referring to the natives of Virginia, especially that portion known as "Novem Belgium or Nieu Nederlandt," says: "Their household stuff, a tobacco pipe, a wooden dish, and an hatchet made of a broad flint; their weapons, bows and arrows, their arrows headed with the bones of fishes."[2]

According to Everard, Clusius says, referring to Windaconoa, in 1585, with whose natives numbers of the Raleigh expedition came in contact, "The English returning from thence brought the like pipes with them to drink the smoak of tobacco."[3]

The native American arts and handiwork are beginning to be somewhat studied, and as a consequence a better understanding is had of limits to implements of native manufacture than was possible a decade since. Among other writers on the subject Dr. Brinton has claimed to find evidences of left-handedness in North American aboriginal art, having noticed an appreciable percentage among arrowheads.[4] If these views are correct, they differ from the experience of one authority herein quoted, who passed a considerable time among American savages living under primitive conditions, nor does it appear to the writer that the mere scrutiny of an arrow would be reliable as to how it would be held in process of manufacture, especially as blades in process of chipping are of necessity constantly reversed as the formation of the blade progresses.

The Choctaws, according to Dr. E. A. Barber, as well as the Mexicans, mixed their tobacco with the leaves of liquid amber.

As showing the wide areas over which specimens of catlinite have been found, Mr. Charles C. Jones, in a letter to Dr. Barber, refers to a pipe of this material found in an ancient relic bed about 25 miles from Augusta, on the Savannah River, in Georgia.

There is in the Douglass collection, in New York City, a pottery pipe from Franklin, North Carolina, which resembles a snake holding a vase in its distended jaws. This pipe is of interest as related to the bird pipes of Georgia (fig. 231), and possibly to those of northern New York (fig. 115) as well.

The Florida Indians during the first half of the sixteenth century, according to Cabeça de Vaca, built their cabins of mats on oyster-shell piles, on which they slept perfectly naked. They never, he says, build

[1] Nathaniel Morton, New England's Memorial, p. 30, Boston, 1855.

[2] Cosmography, Chirography, and History of the Whole World, IV, p. 96, London, 1682.

[3] Dr. Everard, Panacea, or the Universal Medicine, p. 63, London, 1659.

[4] D. G. Brinton, American Anthropologist, X, p. 179.

a cabin unless near wood and water.[1] De Vaca's narrative can not fail to be of interest, as being probably the first of a white man's experience within the confines of the territory north of Mexico.

Jean Ribault, in February, 1562, commanded for Coligny, who had secured a patent from Charles IX to colonize French Protestants in America, an expedition which sailed from Havre, France. At the end of April they reached the coast, and on May 1 discovered the river of May, now the St. Johns. Returning to their ships they sailed up the coast to Port Royal and located a fort not far off. They left there a small garrison and then returned to Europe. Two years later Laudonniere reached the coast, and in 1565 there was not far from one thousand persons in the third expedition of Ribault, who were all massacred by the Spanish.[2]

The Pehuenches of Parana smoke by passing one pipe around. Each one fills himself until he can inhale no longer, holds his breath as long as he can, and exhales through the nose. The Eskimo and the Japanese retain the smoke of a single whiff until they can endure it no longer.[3]

The natives of Patagonia are said to make wood or stone pipe bowls fitted with a silver or metal tube.[4] "The smoker," he says, "lights his pipe, then lies prone on the ground, and after puffing a portion of smoke to each cardinal point and muttering a prayer he swallows several mouthfuls of tobacco smoke, which produces intoxication and partial insensibility, lasting perhaps for the space of two minutes. The tobacco used for smoking (for they never chew) is generally obtained from the settlements, but failing in this a herb substitute is procured from the Araucanians. This is never smoked pure, being invariably mixed with either wood chopped up small or 'Yerba' [Paraguay tea] stalks if obtainable. The mixture with dung mentioned by M. Guinnard is unknown among the Tuelches."[5]

Certain of the natives of Terra del Fuego in 1822 were said to strike fire with iron pyrites against quartz.[6]

An early reference to incensing refers to Magellan's voyage where it is said, "Not far from Zubut lies the isle of Mathan. When a man of figure dies all the chief women go to his house, the room being incensed with myrrh and storax all the while."[7]

Mr. M. Eels, in a letter to Dr. E. A. Barber in 1878, says that among the Twanas, a part of whom talk the Skwaksin dialect of the Nisqually

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[1] Voyages de Cabeça de Vaca, pp. 11, 147, translated from Valadolid edition of 1555.

[2] Charles W. Baird, History of the Huguenot Emigration to America, I, New York, no date.

[3] Hutchinson, Parana, p. 31, London, 1886.

[4] George Charworth Musters, At Home with the Patagonians, p. 169, London, 1871.

[5] Idem, p. 174.

[6] A. Morlot, General Views on Archæology, Smithsonian Report, 1860, p. 286, referring to Weddell's "A Voyage towards the South Pole in 1822 and 1824," London, 1827.

[7] John Harris, Voyages and Travels, I, p. 16, London, 1705, referring to the voyage of Ferdinandus Majelianes in 1521.

language, and the Clallams, at present, smoking is common, but he could not learn that there was ever any smoking previous to the coming of the English and Americans sixty or eighty years ago. When the Hudson's Bay Company came, it became more common. [1]

The Haidasta, Dr. Barber says, use the bark of *Cornus stolonifera*, also *Cornus sericea*, dried and prepared for smoking.

The Tunguses are said never to "travel without having a sort of censor hung on their arm (or little chafing dish). In throwing on this portable fire wood and half-dried herbs they stir up a great deal of odor to their fire which all the insects dislike." [2] The same author says the Lapps make this odor with sponge.

Mr. Raphael Pumpelly writes Dr. Barber from Oswego, New York, in 1878, that "in Ladak and Thibet the natives in traveling make a small, smooth hole in the ground, which they fill with tobacco, and then make a connecting hole through which they draw the smoke directly into the mouth, thus making the ground perform the parts of a bowl."

Mr. Clarence B. Moore has illustrated from mounds on the Georgia coast two or three other pipes, both of pottery and of stone, which present unique features impossible to classify with any type.[3]

There are in the U. S. National Museum a number of walrus-ivory pipes which are commonly bored lengthwise of the tusk, one-half from each end. The opening in the larger end is subsequently plugged with a piece of ivory and colored black to conceal where the plug is inserted. At times the smaller end is shaped to form a mouthpiece; at other times an opening is left for the insertion of a mouthpiece composed of wood, bone, ivory, or even of metal, instances occurring of copper cartridges being so employed. The bowls of the character of those of figs. 188 to 192, inclusive, which appear to be of Japanese type, are held in position by gluing, mortising, with dowels, or, as is often the case, bound on with green seal skin thongs and allowed to dry. The bowls are variously of stone, bone, ivory, or metal. The etching on these pipes is often quite elaborate, representing scenes from Arctic daily life, both ludicrous and serious. There is a specimen of this type which has been bored by a succession of holes along the back all being subsequently cut into a single opening, which was subsequently closed with a tight plate as in fig. 189, though much longer. There is, however, strong reason to suppose such pipes to be modern and intended rather for sale than for smoking.

There is in the U. S. National Museum (No. 1210, loans catalogue) the cast of a steatite pipe in the form of a flying squirrel, collected by Maj. W. B. Camp, Sacket Harbor, New York, which is of unique character in that it is a straight tube, the exterior representing the squirrel with its extended wings in the act of sailing through the air. This pipe is described in the Proceedings of the Jefferson County Historical Society for 1895.

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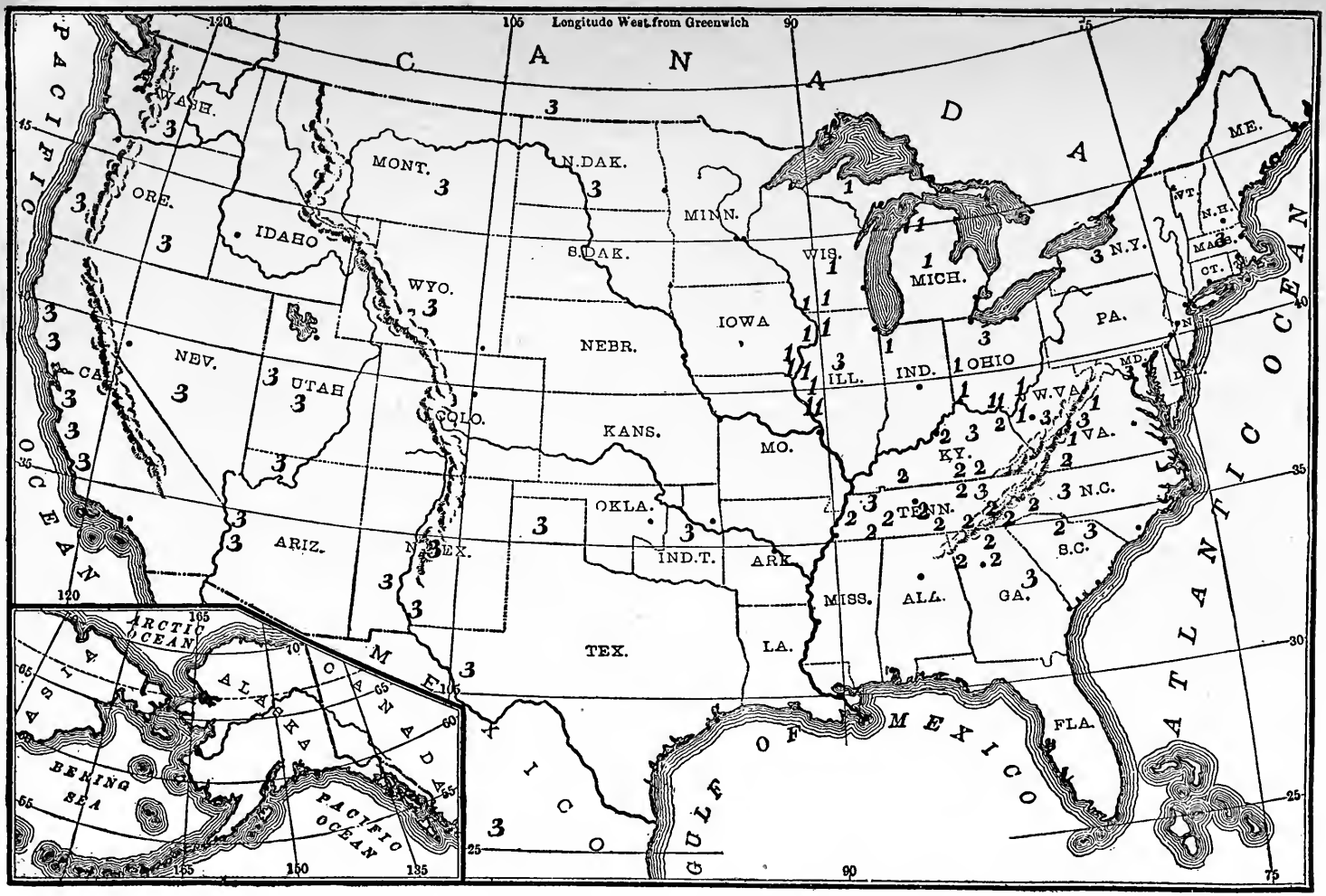
[1] Mr. Eels to Dr. E. A. Barber, September, 1878.

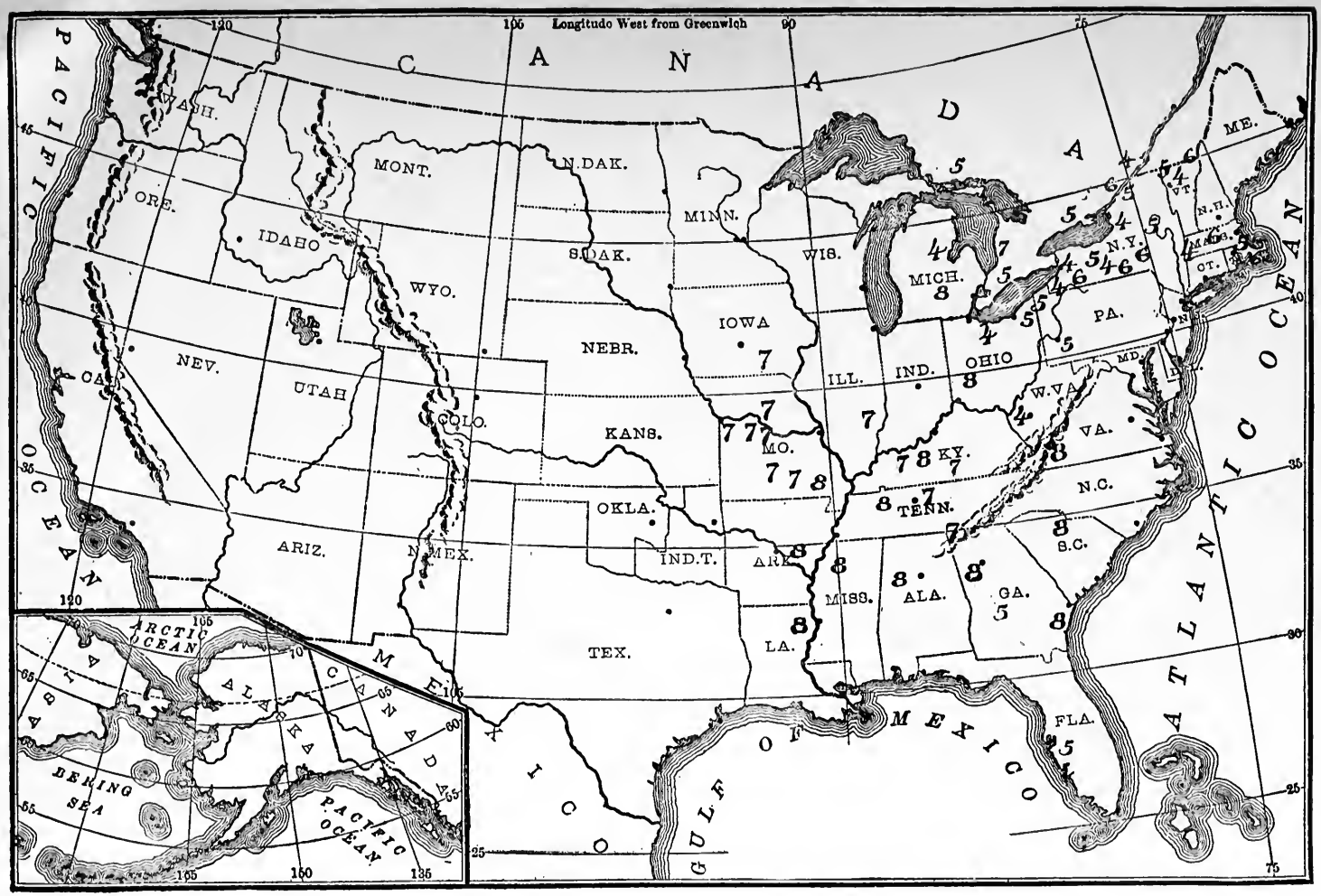
[2] Cornelius De Paw, Recherches Philosophiques sur les Américains, I, p. 247.

[3] Clarence B. Moore, Certain Aboriginal Mounds of the Georgia Coast, Philadelphia, 1897.



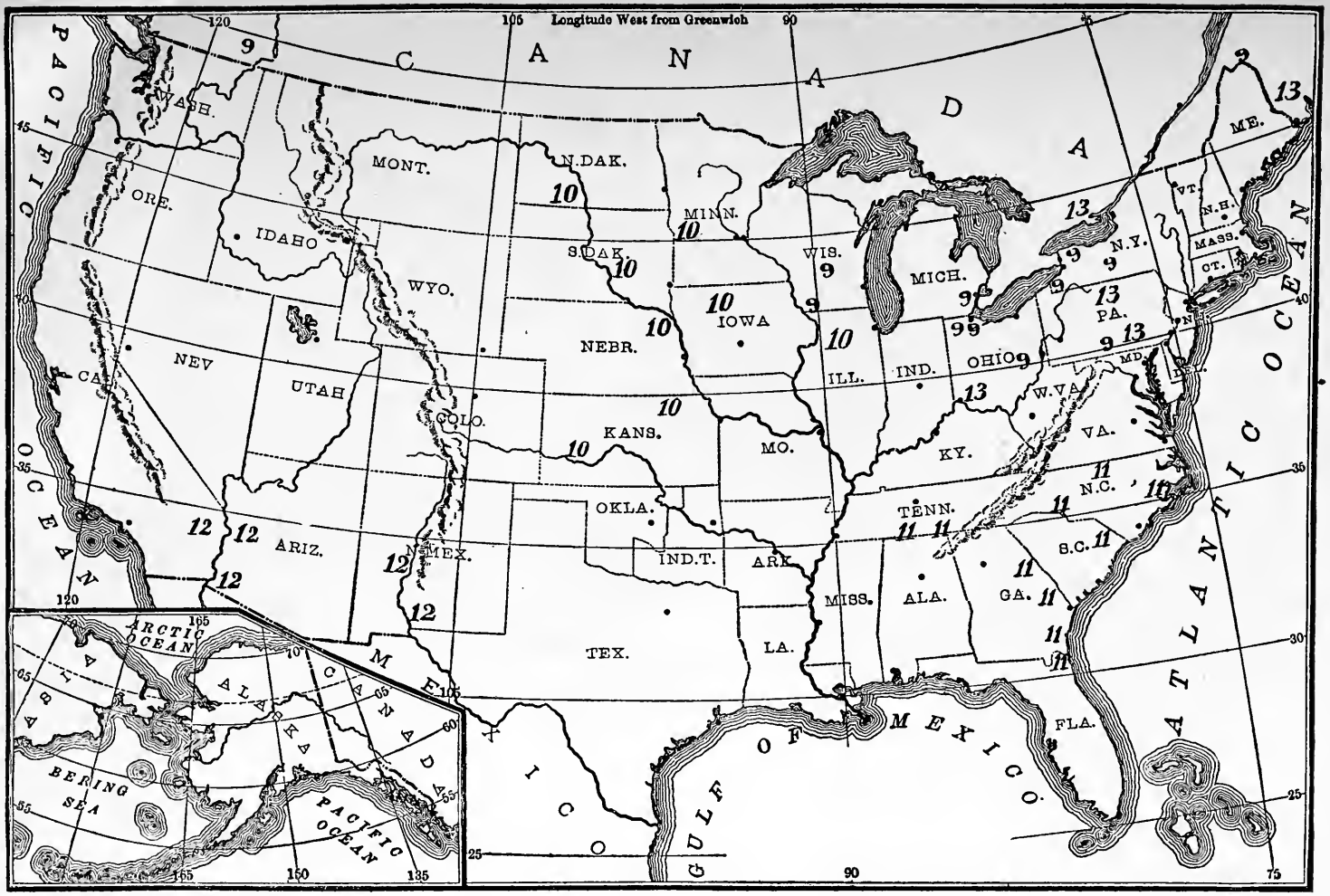
LOCALITIES WHERE TYPICAL PIPES ARE FOUND.

1. Curved-base mound pipe.
2. Heavy bird or animal pipe.
3. Tubular pipe.



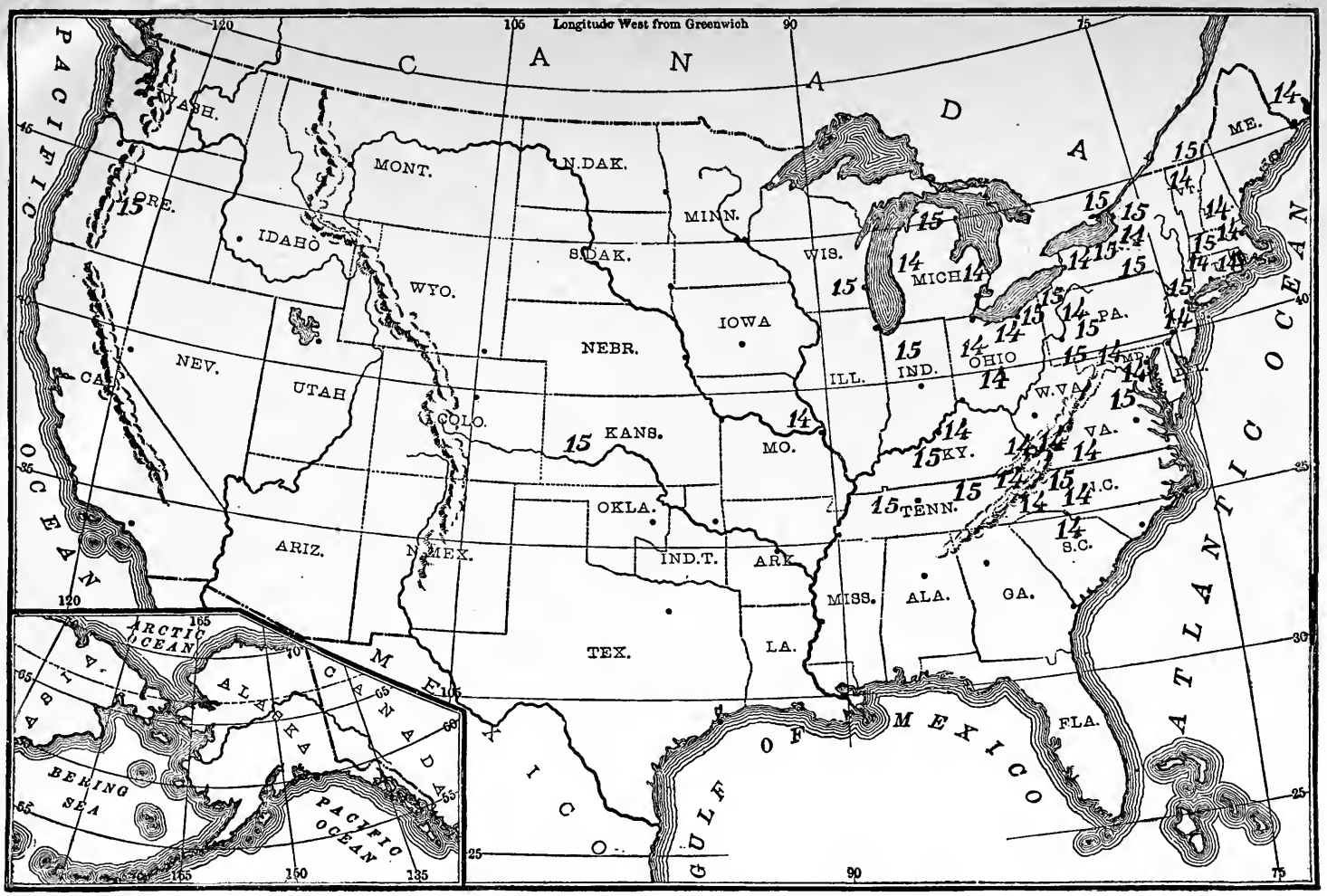
LOCALITIES WHERE TYPICAL PIPES ARE FOUND.

4. Iroquoian clay pipe. 5. Iroquoian grotesque bird pipe. 6. Iroquoian rectangular pipe.
7. Disk or jewsharp pipe. 8. Biconical pipe.



LOCALITIES WHERE TYPICAL PIPES ARE FOUND.

9. Micmac, keel-base pipes.
10. Siouan and Catlinite type.
11. Southern mound type.
12. Pueblo pipes.
13. Rectangular pipes, birds and animals on bowls.



LOCALITIES WHERE TYPICAL PIPES ARE FOUND.

14. Monitor pipe.

15. Bowl and vase-shaped pipes.

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